Glacier Bay National Park and Preserve

Summer 2020

The FAIRWEATHER

VISITOR GUIDE

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Alaska Geographic

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The Fairweather

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Welcome to Glacier Bay

Welcome to Glacier Bay National Park and Preserve, a park visited each year by 650,000 people, where you can still kayak for days or hike for weeks, not seeing another person. One can experience Glacier Bay in much the same way as a visitor did 50 years ago. Our goal is for anyone to have the same opportunity 50 years from now. How can that be achieved when many national parks suffer from crowds, and Glacier Bay has seen much the same growth in visitation?

The mission of the National Park Service is often described as a balancing act; "to conserve the scenery... and to provide for the enjoyment of the same ... as will leave them uimpaired for the enjoyment of future generations." The Huna Tlingit who have called Glacier Bay homeland for countless generations (page 6) also have balance - *wooch yax̲ kadál* - as a core belief that underlies community interaction and their relationship with the natural world.

When I worked as a marine biologist here in the 1990s, the park was engaged with many struggles to achieve balance. Conflict with the cruise industry over increased vessel numbers and the impacts on whales, conflict with the State of Alaska over jurisdiction of marine waters, conflict with the local community over commercial fishing, and conflict with the Huna Tlingit over access and respect for their homeland. Today we are fortunately in a much different world, working in partnership with the cruise industry, the local industry, and the Huna Tlingit. We have been able to find balance, *wooch yax̲ haaw kawdidáal*, among different users of the park, as well as between experiences and preservation. Unique among national parks, Glacier Bay has a complete visitor management system that ensures that visitors seeking experiences as different as a ship or solitary kayak can realize these experiences with the same quality as past generations. This system is not simple and did not come about easily. It utilizes science (pages 14-19), respect for many types of national park experiences, and the constant question of how to provide for the greatest enjoyment by the public while preserving the park for future generations. We now have the necessary task of updating this system, taking into consideration changes in both society and the natural world while also seeking the balance that is the core to our National Park Service mission. The park successfully updated its Frontcountry Plan last year, and now seeks to do the same for its Backcountry Plan (page 9) and Vessel Plan.

There is a memorial coin underneath each of the four house posts in *Xunaa Shuká Hít* (page 6), the Eagle and Raven totem poles, as well as the healing totem (page 8). There are four words on the coin, in Tlingit and English, that drive every decision and every action this park takes:

Haa yátx'i jeeyís áyá
For Our Children Forever.

Philip Hooge, Superintendent

Cruise ship passengers in Glacier Bay can still experience a wild, glacial landscape.

Glacier Bay offers a myriad of opportunities to "Find Your Park."

Explore Bartlett Cove

Rangers lead visitors of all ages on daily walks to explore the Bartlett Cove area.

If you just have a few hours...

Stop by the Visitor Center: On the second floor of the Glacier Bay Lodge is the National Park Service (NPS) information desk, auditorium, exhibits and public reading area. Open daily, with educational materials from Alaska Geographic for purchase.

Catch a film: Several different NPS films are shown daily in the auditorium.

Walk the Forest Trail: Go on your own or with a ranger. Ranger-led walks meet at the lodge. See trail details, page 5.

Go for a beach walk: See trail details, page 5.

Take in an evening program: Join a ranger in the auditorium or Tribal House for a presentation.

Visit the Whale Exhibit: See one of the largest humpback whale skeletons on display in the world. Located near the Visitor Information Station.

View the Tribal House and the Healing Pole: Walk along the Tlingit Trail to explore Huna Tlingit connections to Glacier Bay. See pages 6–8.

If you have a half day...

Hike to the Bartlett River: See trail details, page 5.

Rent a bike: Start at the Glacier Bay Lodge and pedal towards Gustavus.

Explore the intertidal zone at low tide: See map page 5.

If you have a full day...

Hike to Bartlett Lake: See trail details, page 5.

Go for a paddle: There are several options for kayaking around Bartlett Cove. Take a guided kayak trip, or rent your own from Glacier Bay Sea Kayaks.

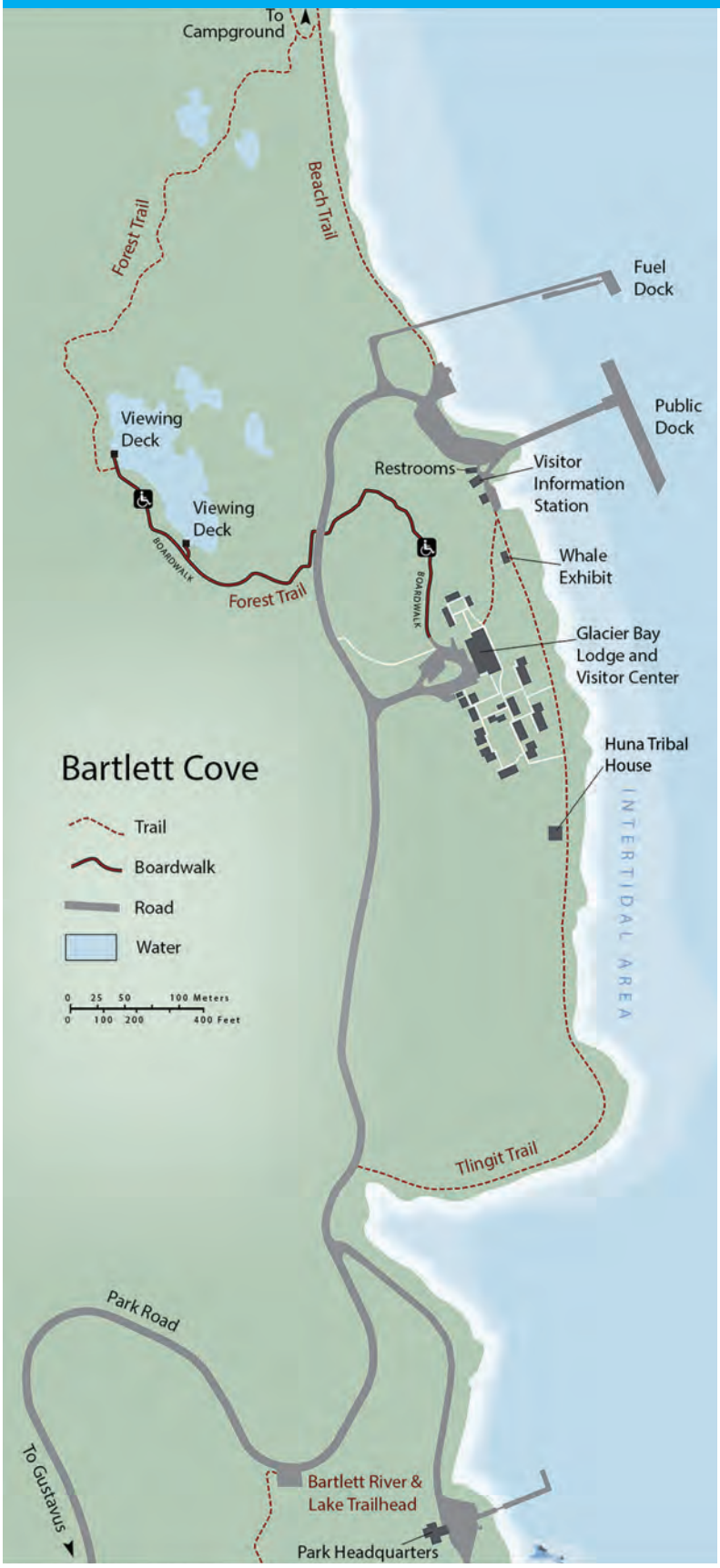
Become a Junior Ranger: Kids can visit the ranger at the NPS information desk to pick up their free Junior Ranger Activity Book. See page 38.

Explore Glacier Bay on the Dayboat: Spend the day exploring Glacier Bay to observe wildlife and tidewater glaciers. Stop by the lodge for reservations.

Get the Latest Schedule of Events

Please see the NPS Visitor Center information desk in the Glacier Bay Lodge, the bulletin board in front of the lodge, or the Visitor Information Station (VIS) near the public dock for updates, desk hours, and evening program locations and topics.

Trails



Bartlett Cove is the only developed area within the wilds of Glacier Bay. The forests and shorelines offer great opportunities for hiking and exploring. Maps are available at Glacier Bay Lodge and the Visitor Information Station (VIS).

Forest Trail

Distance: 0.7 miles (1.1 km) one way
Time: 30 minutes–1.5 hours
This leisurely stroll meanders through a lush forest that grows atop a glacial moraine. A wheelchair accessible boardwalk takes you part of the way, leading to two viewing decks that overlook a serene pond. Return along the shore for an easy one-mile loop. Check the posted activity schedule for ranger-led walks.

Tlingit Trail

Distance: 0.5 mile (800 m) one way
Time: 30 minutes–1 hour
Enjoy this easy stroll along a forested shoreline. View the Healing Pole and a traditional Tlingit canoe, admire a complete whale skeleton, learn about common native plants, and experience Tlingit culture and art at the Huna Tribal House.

Bartlett River Trail

Distance: 4 miles (6.4 km) round trip
Time: 4–5 hours
Explore a dense spruce-hemlock rainforest. The trail through the forest ends at an estuary near the mouth of the river. Each summer, spawning salmon attract otters, eagles, seals, and bears. Anglers enjoy fishing there, too.

Bartlett Lake Trail

Distance: 8 miles (16 km) round trip
Time: 7–8 hours
About ¾ of a mile down the Bartlett River Trail you will find the lake trail, a branch trail that climbs the moraine. This primitive trail is a rugged day-hike, with rewards of solitude and a tranquil lake. Bring water, food, and rain gear.

Explore the Shore

Distance: varies
The shoreline beyond the docks continues for miles past the campground. You may observe land and marine wildlife. Look for birds, listen for whales, and watch for sea otters feeding near shore. This is not a maintained trail.

Xunaa Shuká Hít

Xunaa Shuká Hít stands proudly on the shores of Bartlett Cove.

Dressed in the beaded vest of a Tlingit elder, tribal interpreter Don Starbard shares with visitors: "There's a good balance now. Yes, our young people are going off to college to become successful. But our language is stronger. Our dance is stronger. Our canoes are strong, and, as you can see the *Xunaa Shuká Hít*, our future homeland is strong." All summer long, visitors gather at the Tribal House. They listen to traditional stories and explore the intricately carved and painted building. Cultural interpreters working for the National Park Service (NPS) and the Hoonah Indian Association (HIA), the tribal government, share deeply of their traditions, history, enduring connection to Glacier Bay homeland, and the collaborative efforts that led to the completion of this magnificent building.

For countless generations, the Huna Tlingit sustained themselves on the abundant resources found throughout Glacier Bay prior to the Little Ice Age. Although villages inside the bay were overrun by glacial advances in the 1700s, the Huna Tlingit re-established fish camps and seasonal villages soon after glacial retreat. Establishment of Glacier Bay National Monument in 1925 (and later National Park) and implementation of laws and park regulations led to a period of alienation and strained relationships between tribal people and the NPS. Time and new understandings have brought much healing. In recent years, the NPS and HIA worked cooperatively to reinvigorate traditional activities, develop cultural programs for youth and adults, amend regulations to allow for a broader range of traditional harvests in park boundaries, and preserve oral histories.

The most symbolic cooperative venture—*Xunaa Shuká Hít* (roughly translated as Huna Ancestors' House)—

HIA cultural interpreter leads a group down the Tlingit Trail to *Xunaa Shuká Hít*.

NPS cultural interpreter shares messages represented within the Raven and Eagle totems.

Tribal members dance and sing during the August 2016 Tribal House Dedication.

now stands proudly on the shoreline of Bartlett Cove. Dedicated in August 2016 and opened to the public in summer 2017, it now draws thousands of visitors from around the world.

A team of clan leaders, craftsmen, planners, architects, and cultural resource specialists designed *Xunaa Shuká Hít* to reflect a traditional architectural style reminiscent of ancestral clan houses with modern touches suitable for the needs of the community today. Inside the Tribal House are four richly detailed massive cedar interior house posts and an interior house screen which depicts the stories of the four primary Huna Tlingit clans and their tie to Glacier Bay homeland. These cultural elements impart spiritual value to the Tribal House, and, as importantly, their design and completion expand the circle of tribal members who hold traditional skills and share in cultural knowledge.

The 2,500 square foot Tribal House is not only a place for visitors to learn about Tlingit traditions, but is also a venue for tribal members to reconnect with their traditional homeland, life-ways, and ancestral knowledge. Within months of its dedication, the Tribal House inspired native high school students to spend their winter school break at the Tribal House learning traditional crafts from elders and culture bearers. Months later, hundreds of tribal members gathered to raise the Eagle and Raven totems that grace the

Hoonah youth welcome traditional dugout canoes on Bartlett Cove's shoreline during the 2018 Healing Pole Dedication.

sides of *Xunaa Shuká Hít*. In August 2018, these poles were joined by *Yaa Naa Néx Kootéeyaa* (Healing Pole). This totem, collaboratively designed by NPS and HIA, reveals the story of the journey through a painful past to a healthier, more meaningful partnership. *Xunaa Shuká Hít* is a place of learning, growth, inspiration, and continued healing for generations to come.

Images of the Huna Tribal House dedication and carving projects are available on the park's website under the Tribal House Media Gallery. To learn more about special events and opportunities to experience the Tribal House, check the posted activity schedules in Bartlett Cove or ask a ranger.

Traditional songs inspire the strength and stamina to carry the Raven and Eagle totems at the May 2017 Totem Raising.

Yaa Naa Néx Kootéeyaa

I believe we are on a path - that our people will be remembered...”

- Frank Wright, President of Hoonah Indian Association

Our pole...is a story pole. It is, essentially, the recorded history, not only of the Huna Tlingit, not only of Glacier Bay National Park, but of our long, sometimes painful, sometimes joyous, journey together.

- Philip Hooge, Superintendent

Philip Hooge (left) and Frank Wright, Jr. (right) at the Healing Pole Dedication.

Journey of Healing

Raised on August 25, 2018, *Yaa Naa Néx Kootéeyaa* (Healing Pole) tells the story of the long journey for both Huna Tlingit and the National Park Service to heal years of misunderstandings and hurt.

Designed collaboratively by tribal elders, carvers, and NPS staff, the pole contains a mix of traditional formline design and modern representations of symbols—differentiating it from other poles in Southeast Alaska.

Glacier Bay is the traditional home and “breadbasket” of the Huna Tlingit—sustaining them physically and spiritually until a rapidly advancing glacier pushed them out in the late 1700s.

The Huna Tlingit felt that the federal government—a faceless, soulless being with too many hands—barred them from many traditional practices upon their return after the glacier receded.

Traditional dugout canoes support healing journeys cooperatively planned by NPS and the Hoonah Indian Association—connecting tribal members with Glacier Bay homeland.

Visit the Healing Pole next to the Visitor Information Station, and read the complete story from bottom to top!

Planning for our Park

Glacier Bay by satellite, from NASA's Earth Observatory.

Your Opinion Counts

You are a part of a long legacy of adventurers inspired by Glacier Bay! Keep connected and involved even from afar. The NPS relies on your feedback to help guide stewardship of America's great natural and cultural resources.

Glacier Bay National Park is currently working with the NPS to update some of the park's management plans. This planning effort will strengthen the park service mission to provide for visitor enjoyment while also preserving the park's extraordinary natural and cultural heritage for future generations.

Please take the time to visit our Frontcountry and Backcountry Management Plan websites (see below) or contact us (see right) to learn more about our process and progress, and to offer your unique perspective. There are multiple ways you can be involved.

Follow implementation of the updated Bartlett Cove plan::
go.nps.gov/GLBA_FMP
Frontcountry Management Plan website

Follow Glacier Bay wilderness experience planning:
go.nps.gov/GBwild
Backcountry Management Plan website

Stay Tuned!

You don't need to live close by to be connected and stay involved. You can follow progress and offer feedback to inform park planning in the following ways:

√ **SUBSCRIBE** to our planning notification list by sending us your contact information:

glba_public_comments@nps.gov
Glacier Bay National Park & Preserve
PO Box 140
Gustavus AK 99826

√ **FOLLOW** the park's social media for press releases and planning announcements (public meetings, review drafts, comment periods).

√ **VISIT US ONLINE** to learn more about park management: https://www.nps.gov/glba/getinvolved/planning.htm

Visit the NPS online portal for real time public notices and comment opportunities: Planning, Environment, and Public Comment **(PEPC)**

https://parkplanning.nps.gov/glba

Timeline of Glacier Bay

Since time immemorial, Tlingit people live in the area that is now Glacier Bay. Advancing glaciers in the 1700s during the Little Ice Age force the Tlingit out of their homeland. After the Little Ice Age, the glacier melts back and the ocean fills the valley quickly, creating Glacier Bay.

1794 Captain George Vancouver of the H.M.S. *Discovery* and Lt. Joseph Whidbey describe Glacier Bay as "a compact sheet of ice as far as the eye could distinguish." The "bay" is a mere five-mile indentation in the coastline.

1883 James Carroll and other commercial steamship captains make Muir Glacier a popular tourist destination.

1925 Ecologist William S. Cooper, studying plant succession in Glacier Bay, and the Ecological Society of America persuade President Coolidge to establish Glacier Bay National Monument.

1980 Congress, under the leadership of President Jimmy Carter, signs the Alaska National Interest Lands Conservation Act into law. Glacier Bay becomes a national park and preserve encompassing 3.3 million acres.

1995 The National Park Service and Hoonah Indian Association sign a Memorandum of Understanding to establish a working partnership.

2019 Glacier Bay welcomes over 640,000 visitors annually.

1750 *1800* *1850* *1900* *1950* *2000*

1770s–1790s
European explorers arrive. Excursions led by Captains Malaspina, La Perouse, Cook, Vancouver, and many others provide the first western descriptions of the area and its people. Cartographers create the first maps of the area and non-Native names are given to landforms.

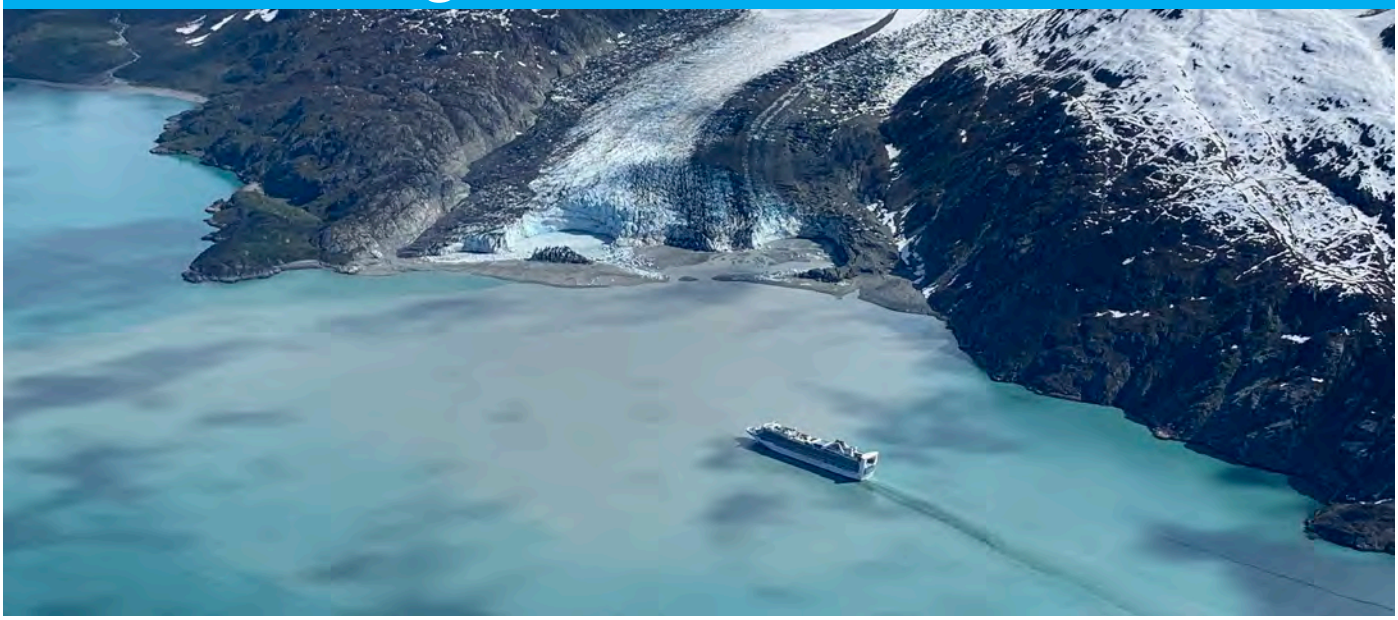
1879 John Muir, guided by Tlingit men, paddles into Glacier Bay. They find the glacial ice has retreated 40 miles since 1794. Muir returns three times over the next 15 years. He constructs a cabin, makes extensive observations of glaciers, and explains interglacial tree stumps. The eloquent writings of enthusiasts like Muir and Eliza Scidmore begin attracting new visitors to the bay.

1916 U.S. Congress passes the Organic Act, creating the National Park Service.

1966 Glacier Bay Lodge opens as part of the "Mission 66" initiative that brought facility improvements to national parks nationwide during the 50th anniversary of the National Park Service.

1992 UNESCO designates Glacier Bay, along with Wrangell-St. Elias National Park and Preserve (Alaska), Kluane National Park Reserve (Canada) and Tatshenshini-Alsek Provincial Park (Canada), as a 24-million-acre World Heritage Site, one of the world's largest internationally protected areas.

2016 The National Park Service celebrates its centennial: 100 years of "America's Best Idea." Glacier Bay celebrates with the opening of the Huna Tribal House, a collaborative project with the Hoonah Indian Association. The building serves as a cultural anchor and a place of learning.



A cruise ship appears small within the expansive Glacier Bay landscape. Through careful vessel management, Glacier Bay National Park seeks to balance visitation with resource preservation.

International Connections

A cruise ship sails into Glacier Bay, one of potentially only two for that summer's day. The ship's company follows voluntary environmental protocols to reduce vessel emissions and lower impacts. The ship's crew curtails activities aboard, encouraging passengers to take in the wilderness around them. Interpretive rangers, invited aboard for the day, share stories of the park and its significance. After visiting the tidewater glaciers, the ship eventually departs leaving nothing but its wake.

This Glacier Bay model of vessel management is a significant reason why in September 2019, managers of the 50 marine sites on the United Nations Educational, Scientific, and Cultural Organization (UNESCO) converged on Bartlett Cove for a symposium with one major goal: to learn from each other how to best manage their protected areas. Over the five-day event, managers from sites all over the world shared stories of the challenges they face including increasing visitation, climate change, and marine pollution. They also shared solutions.

Park Superintendent and West Norwegian Fjords Board Chairman sign Sister Park Agreement at Lamplugh Glacier.

According to Superintendent Philip Hooge, the gathering was a chance to highlight the park's success with public-private partnerships. "Working together with the cruise industry we have been able to successfully deal with some of the issues associated with cruise tourism," he said, "and achieve higher environmental standards using means other than the regulatory process."

While in the bay in front of the Lamplugh Glacier with the marine managers cheering on, Superintendent Hooge signed a Sister Park Agreement with representatives of West Norwegian Fjords World Heritage Site in Norway. The two sites have much in common in that they both feature scenic fjords with major visitation by cruise ships. "This provides an incredible opportunity for protected areas that share so much to learn from each other," said Hooge.

Glaciers

Margerie Glacier flows from the Fairweather Mountains. Glaciers continue to change in response to their environment.

Rivers of Ice

Tall, coastal mountains and an abundance of snow make Glacier Bay a comfortable home for hundreds of glaciers. Storms off of the Pacific Ocean collide with the towering Fairweather Mountains - rain at sea level is typically snow in higher elevations. More snow falls each year than melts. This massive amount of snow compacts, forming ice. With the influence of gravity, the ice slides down the mountainside. Basically, ice in motion is a glacier.

As a glacier flows down the mountainside, it reaches warmer elevations. When a glacier gets more rain than snow, ice melts and the glacier diminishes in size, even as it continues its journey downslope. The balance between the amount of ice forming and ice melting determines whether a glacier advances (grows) or retreats (shrinks), though it always flows forward.

Glaciers shrink in size when more ice is lost from melting than gained from snowfall.

"Words and dry figures can give one little idea of the grandeur of this glacial torrent flowing steadily and solidly into the sea, and the beauty of the fantastic ice front, shimmering with all the prismatic hues, beyond imagery or description."

-Eliza Scidmore, 1883

A few glaciers, called tidewater glaciers, reach all the way to the ocean and are strong enough to survive with their ice touching warm ocean water. Tidewater glaciers have a naturally occurring cycle of advance and retreat that has shaped Glacier Bay for millennia.A few hundred years ago, a glacier that sat mid-way down the bay for centuries advanced rapidly until it came to the waters of Icy Strait. The salty ocean water caused the glacial ice to melt and dramatically break away in a process called calving. Snowfall couldn't keep up with the amount of melting and the glacier retreated quickly. All of the glaciers visitors see in the park today are remnants of that once large glacier.

Changes to glacial ice continue in Glacier Bay. While tidewater glaciers are still influenced by ocean water, all glaciers are now impacted by a rapidly warming planet. Glacier Bay National Park will continue to study glaciers as the climate warms. As a living labratory, Glacier Bay provides outstanding opportunities to explore the intricate dynamics of glaciers.

Park Science

Visitors and researchers alike from around the world explore and admire Glacier Bay. The dramatic retreat of glaciers created a premiere scientific laboratory. Explorer John Muir initiated the park's remarkable legacy of scientific inquiry in the late 1800s. Botanist William Cooper secured protected status for Glacier Bay following his research about how plant life follows glacial retreat. In fact, the initial proclamation protecting Glacier Bay National Park states research as a reason for national preservation. From whales and plankton to climate and otters, research is a common occurrence in the protected laboratory of Glacier Bay. This scientific study provides greater understanding and appreciation for the wilderness we explore. Learn more by reading the following pages, and make your own discoveries in Glacier Bay.

"The most beautiful thing we can experience is the mysterious. It is the source of all true art and science."

- Albert Einstein

Dr. Milner has studied streams created after glacier retreat for 40 years.

Meet a researcher

Sandy Milner, Pioneer of Glacier Bay Streams

Dr. Alexander "Sandy" Milner has been researching Glacier Bay's streams for 38 of the past 40 summers! His first visit was as an undergraduate student on an expedition from Chelsea College, UK in 1977. Here he found a natural living laboratory, a place to pioneer research on how life establishes in new streams.

Today, Dr. Milner is regarded as the world expert on stream ecosystem development following glacial retreat. His work has revealed the patterns of stream succession as new watersheds form in this dynamic landscape. As streams age, the stream channels stabilize, water clarity improves, and water temperature increases. Aquatic insect fauna become more diverse and abundant. Salmon colonize new spawning habitat.

Dr. Milner has shared his passion for learning and for Glacier Bay as a professor at the University of Alaska and the University of Birmingham (UK). He has supervised 12 graduate students (ten of them Ph.D.'s) and authored 26 scientific journal articles focused on stream development in Glacier Bay.

The transformation of streams continues to captivate Dr. Milner. When asked why he returns to Glacier Bay, he explained "I would never have thought when I sampled a cold Wolf Point Creek [Muir Inlet] with no vegetation on a barren landscape in the late 1970s as it emerged from the ice, that I would still be sampling the same stream 38 years later in a cottonwood forest with so much biodiversity and thousands of salmon spawning. The stream system is still dynamic and every year a new discovery is evident."

The mouth of Wolf Point Creek (pictured 40 years ago) emerged from under the retreating glacier in the mid 1940s.

The stream now supports pink salmon runs of more than 12,000 fish.

William S. Cooper recognized Glacier Bay as a living laboratory. He studied the process of pioneer plants colonizing land recently revealed by retreating glaciers.

A Vision of Preservation

People visit Glacier Bay to view amazing scenery, dramatic glaciers, and spectacular wildlife. Yet a century ago one man saw something else of great value here: incredible opportunities for science.

Botanist William Skinner Cooper (1884–1978) came to Glacier Bay in 1916 to study how plants colonize newly-exposed ground following glacial retreat. He recognized Glacier Bay as the best place on earth to witness the process of "plant succession," a fascinating interplay of plants, nutrients, soil, and time. In this process the bare ground emerging from beneath a glacier goes through various stages to become a rich, thick, mossy evergreen forest of towering spruces and hemlocks.

Dr. Cooper saw a natural laboratory in Glacier Bay where scientific principles could be discovered as well as tested; a place where completely new scientific questions could be asked. As a prominent member of the Ecological Society of America, Dr. Cooper successfully led a committee of colleagues in a vigorous campaign to lobby President Calvin Coolidge for protection of the Glacier Bay area in 1925 as a national monument. One of the monument's fundamental mandates was to preserve the opportunity to conduct scientific studies, making Glacier Bay a true "park for science."

Dr. Cooper returned to his beloved Glacier Bay many times to document the successional development in the study areas and plots he established on his first visit. Dr. Cooper's students and other scientists continue his work on how ecosystems respond to glacial recession and, more broadly, global climate change. This ongoing research makes Glacier Bay the oldest continuously researched post-glacial landscape in the world.

Glacier Bay is preserved as public land for many reasons: protection of wildlife habitat, scenery, value to the world, enjoyment by present and future generations, and as a living laboratory. Glacier Bay still inspires new discoveries today.

Ecologist Brian Buma continues the legacy of research on Dr. Cooper's original plots.

From rock to rainforest—in just 75 years! Images taken at the same location document the landscape changes.

Park Science

Ninety-five percent of Alaska's glaciers are thinning, stagnating, or retreating.

The Ice Is Melting

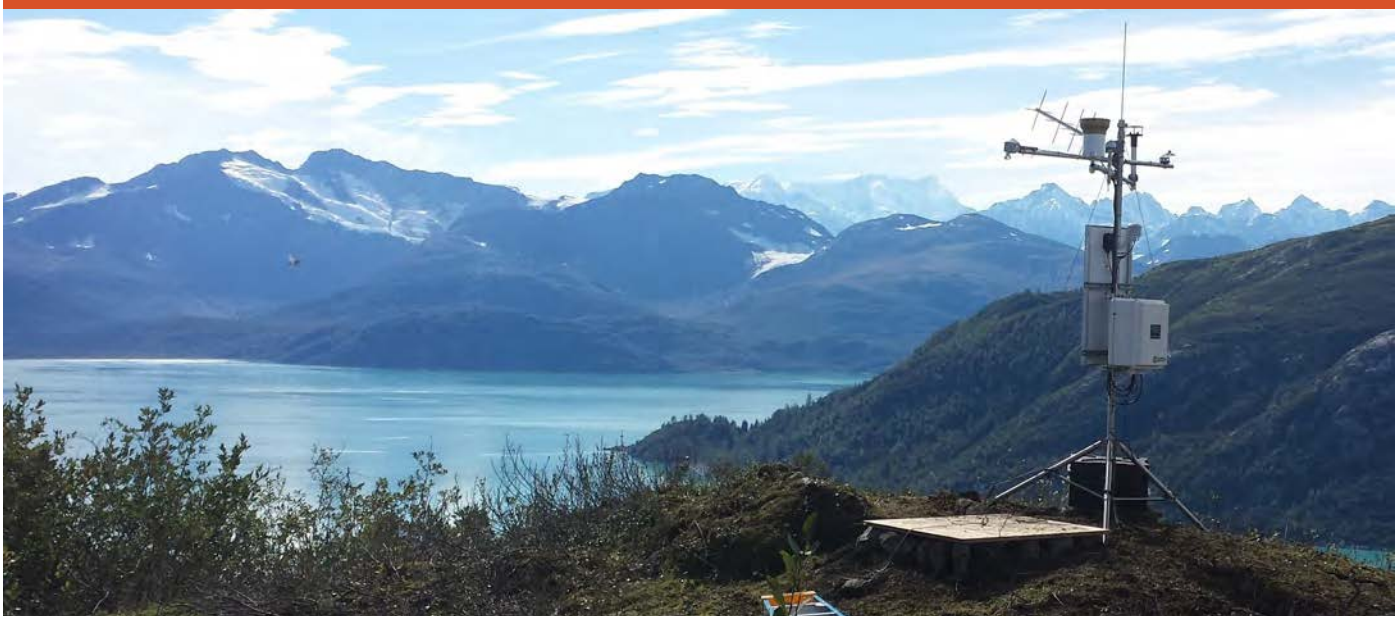
The Earth's climate is changing—and fast! In Glacier Bay, glaciers are rapidly shrinking and ocean temperature is rising. Scientists who study the Earth's climate have documented warming temperatures in Alaska due to increased carbon dioxide levels. Warming temperatures lead to changes in fire cycles, tree growth, animal migrations, and rapidly melting glaciers. Ninety-five percent of Alaska's glaciers are currently thinning, stagnating, and retreating. More importantly, the rate of thinning is increasing. Glacier Bay's glaciers follow this trend. Recent research determined that the area covered by ice in Glacier Bay has shrunk 15% from 1950 to now. Heavy snowfall in the towering Fairweather Mountains means that a few glaciers might remain stable in Glacier Bay, a rarity in today's world.

Alaska and other polar regions experience the effects of climate change more strongly than other places. Decades of data from NASA's Goddard Institute for Space Studies show that Alaska and the polar regions have warmed more than twice as much as the rest of the earth. Climate change is a reality for Alaskans, threatening villages with coastal erosion, changing subsistence practices, and altering weather patterns. Ask park rangers about what changes they have noticed in Glacier Bay.

There is good news. Humans are inventive, resourceful, and capable of overcoming great challenges. Although climate change is a global concern, we each hold a part of the answer to minimizing its impact.

Take a good look at the glaciers you see in Glacier Bay today. The next time you see these glaciers, they will be different. The Earth's climate is changing and Glacier Bay is warming. How will these changes affect you? One fact is certain: the choices we make today will make a difference in the future.

For more information about climate change in national parks, visit www.nps.gov/climatechange



A weather station high above the bay collects information that will contribute to understanding Glacier Bay's changing climate.

Tracking Ecosystem Change

Glacier Bay National Park and Preserve is a place of constant change. What you see today will be different tomorrow. Visitors experience a dynamic landscape and seascape that are continually adjusting, balancing the forces of nature. In many ways, intricately linked climate and ocean processes drive the park's changes. Some connections are quite clear—glaciers recede in a warming climate. Others are less obvious—ocean acidity impacts the food webs that many of the park's most iconic species, such as humpback whales and sea otters, depend on. Therefore, long-term records of climate and ocean conditions provide the necessary backdrop for understanding the changes occurring in Glacier Bay.

Just as a doctor assesses your health based on a medical history, Glacier Bay National Park and Preserve along with the NPS Southeast Alaska Network inventory and monitoring program are assessing Glacier Bay's health through long-term monitoring of selected climate and ocean "vital signs." A number of weather stations are being installed throughout the park to track climate health. These automated stations monitor long-term trends in air and soil temperature, precipitation, solar radiation, and snow depth.

Oceanographic monitoring was initiated in 1993 to assess the health of Glacier Bay's marine waters, representing one of the longest-running oceanographic datasets in Alaska waters.

Oceanographic conditions—including water temperature, salinity, solar radiation, water clarity, dissolved oxygen concentration, and indicators of phytoplankton abundance—are monitored at fixed stations throughout the bay for determining long-term trends.

To take care of this special place, it is important to fully understand the health of its natural systems. As Glacier Bay continues to change, the long-term monitoring of its vital signs, both above and below the water, helps us to further understand the forces at work in order to protect the park well into the future.

More information and access to data and reports are found here: https://www.nps.gov/im/sean/index.htm

Researchers collect ocean water from the depths of Glacier Bay to document changing conditions for marine life.

Glacier Bay scientists and cruise ship pilots are working together to study and protect humpback whales.

New Tools for Avoiding Whale-Ship Collisions

Glacier Bay National Park is the same size as the state of Connecticut, 3.3 million acres, though they are certainly very different! For example, while Connecticut has more than 20,000 miles of public roadways, Glacier Bay has only six miles. Yet thousands of people travel through Glacier Bay on another "highway": Glacier Bay's extensive waterway.

Navigating a ship has some similar hazards as driving a car, such as wildlife avoidance. While drivers in other national parks watch out for squirrels and deer jumping into the road, cruise ship pilots in Glacier Bay are alert for humpback whales suddenly appearing in front of their vessels. In fact, research has documented that over 75% of ships in Glacier Bay experience whales surfacing within 3,280 feet (1,000 meters) of the ship's bow.

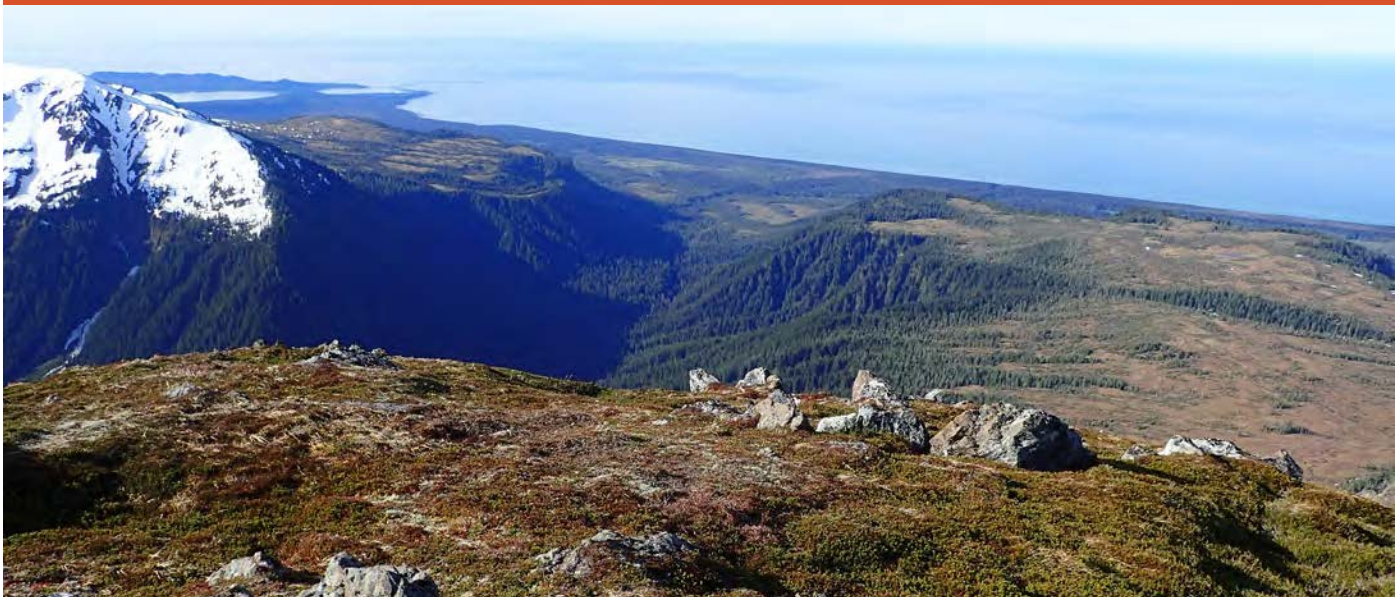
Seeing a whale close to a ship is exciting, yet can also be perilous to whales. Whales are often focused on feeding, so they are not always aware of a ship's presence nearby. In order to keep people and whales safe in Southeast Alaska, Glacier Bay is collaborating with several organizations to develop best practices to minimize the chance of a whale-ship collision.

Since 2012, Glacier Bay scientists have worked with experienced marine pilots to test and implement techniques for avoiding whales. A new training currently under joint production will provide marine pilots the opportunity to "practice" whale avoidance techniques in a simulator. This training curriculum is the first of its kind to couple the science of whale behavior with the professional discipline of ship maneauvering.

Another collaborative tool is Whale Alert. Throughout Southeast Alaska, cruise ship pilots and biologists are working to produce near real-time whale sighting maps through a smart phone or tablet application. Ships can then avoid current locations where whales are congregating, thereby reducing the risk of a collision.

Visitors keeping a watchful eye on the water have a great chance of seeing a humpback whale while traveling on the Glacier Bay waterway. New tools are helping "drivers" in Glacier Bay avoid whale-ship collisions.

For more information on Whale Alert, visit www.whalealert.org.



View of uplifted marine terraces along Glacier Bay's Outer Coast where sediments containing pre Ice Age forests are preserved.

Ice Age History of Glacier Bay's Outer Coast

Could Glacier Bay hold a missing piece in the story of human migration to North America? Dr. Dan Mann, a scientist from the University of Alaska, is searching the park's wild Outer Coast for clues.

Glacier Bay is famous for providing insights into nature's recovery after glaciers retreat. Many of these changes occurred in less than 300 years—the blink of an eye in geologic terms. Yet the park contains older records of change, some of which may help settle the debate about when people first reached the Americas.

Forty thousand years ago, a forest like the one found today grew along the Outer Coast, a rugged wilderness between the Gulf of Alaska and the Fairweather Range. Shortly thereafter, glaciers advanced, destroying everything in their paths. However, isolated upland areas were beyond the glaciers' reaches, so soil and vegetation remained.

Dr. Mann's search for these areas containing ancient soils, buried forests, and uplifted beach deposits starts in the office. He uses aerial photos to identify locations likely to have escaped glacial destruction. The challenge is actually getting there. The team lands in a float plane and treks through dense vegetation and across glacial lakes. They search for plant remains to use for radiocarbon dating. Preserved pollen samples determine ancient vegetation. Ripple forms preserved in buried sand indicate glacier flow. Field work is often interrupted by storms, bears, and, sometimes, getting lost in the woods.

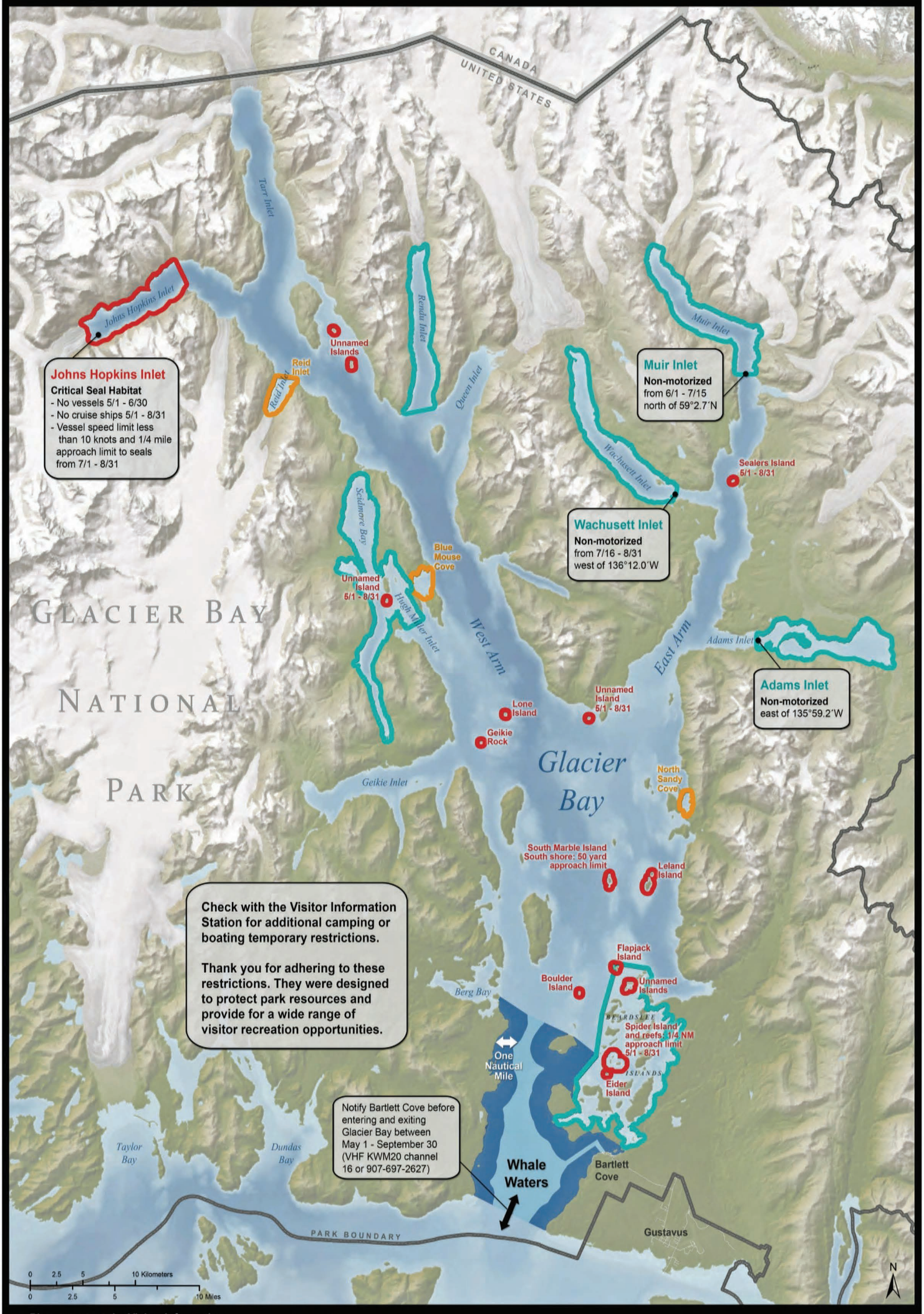
So far, results indicate that glaciers retreated abruptly 16,000 years ago, and by 14,600 years ago the Outer Coast was ice-free. This date is important because the earliest archaeological remains in Oregon and Chile date to shortly thereafter. This study demonstrates the feasibility of the First Americans traveling south along this ice-free coast. The search continues for the elusive missing piece, an actual archaeological site proving people were present along the coast at that time. Until that discovery, researchers will continue their work along the Outer Coast to decipher Glacier Bay's history.

Researcher digs to sample the remains of a 40,000-year-old forest bed that may hold ancient clues to human history.

Guide to Park Waters

For Boaters, Kayakers, and Campers

Glacier Bay National Park & Preserve
National Park Service
U.S. Department of the Interior



Johns Hopkins Inlet
Critical Seal Habitat
- No vessels 5/1 - 6/30
- No cruise ships 5/1 - 8/31
- Vessel speed limit less than 10 knots and 1/4 mile approach limit to seals from 7/1 - 8/31

Muir Inlet
Non-motorized
from 6/1 - 7/15
north of 59°2.7'N

Wachusett Inlet
Non-motorized
from 7/16 - 8/31
west of 136°12.0'W

Adams Inlet
Non-motorized
east of 135°59.2'W

Check with the Visitor Information Station for additional camping or boating temporary restrictions.

Thank you for adhering to these restrictions. They were designed to protect park resources and provide for a wide range of visitor recreation opportunities.

Notify Bartlett Cove before entering and exiting Glacier Bay between May 1 - September 30 (VHF KWM20 channel 16 or 907-697-2627)

Please contact the Visitor Information Station for additional information about boating permits, camping permits, or other questions concerning Glacier Bay.
(907) 697 - 2627
1 Park Road, PO Box 140
Gustavus, AK 99826
http://www.nps.gov/glba

Legend

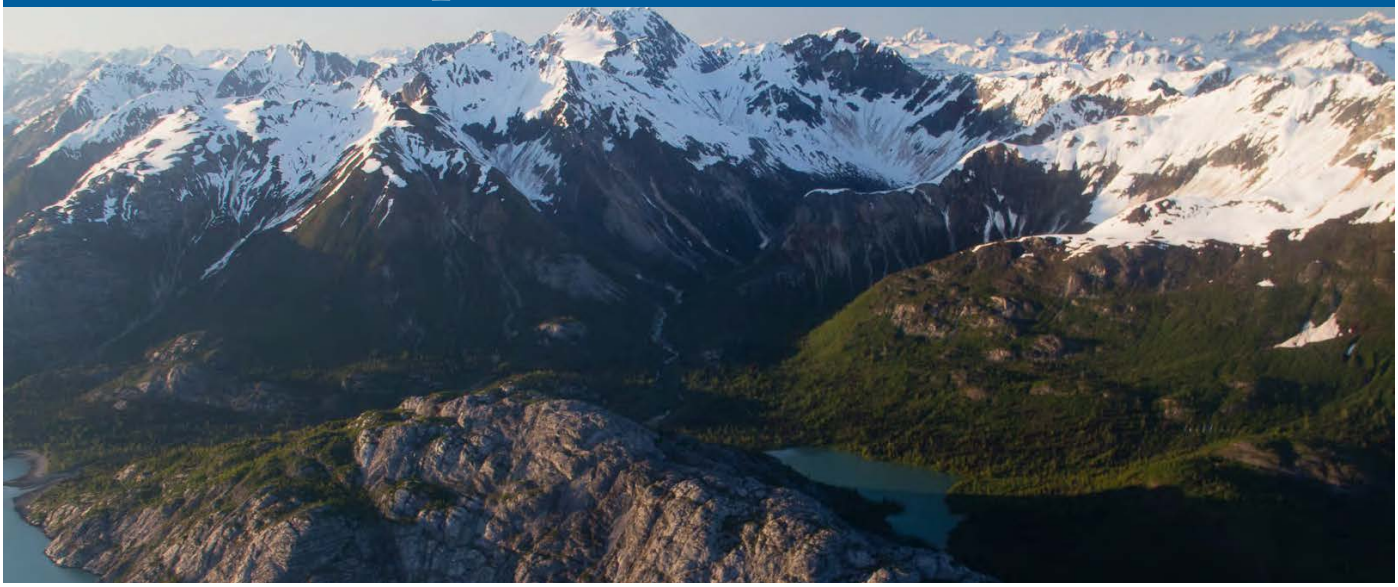
Critical Wildlife Areas
Year-round closures, except as noted
Approach no closer than 100 yards

Non Motorized Waters
5/1 - 9/15, except as noted

Whale Waters
Vessel course and speed restrictions apply 5/15 - 9/30
Darker blue indicates one nautical mile from shoreline

Noise Restricted Areas
Generators prohibited 6/1 - 8/31 from 10pm to 6am

Plan Your Trip



Glacier Bay's vast landscape invites exploration.

Amazing Adventures Await

Glacier Bay provides incredible opportunities for wilderness discovery. Wilderness is full of surprises, so planning ahead and preparing for your adventure helps ensure a fulfilling and safe trip. The following pages give a wealth of information about camping and boating in Glacier Bay.

If you plan to camp or boat during your visit, your first stop should be at the Visitor Information Station (VIS) near the public use dock. During the summer, a free permit is required for all motorized boating and overnight camping. Orientations are required annually for all campers and boat captains. These orientations will help you to make the most of your time in Glacier Bay, safely and with minimum impact to the park. Orientations cover current backcountry conditions, regulations, safety issues, resource situations, tides, and weather. Backcountry campers can check out bear-resistant food containers to use free of charge during their visit.

It is your responsibility to know and follow the regulations of Glacier Bay National Park and Preserve. We can help. If you have any questions, please contact the park or ask a park ranger at the VIS, the visitor center, or at park headquarters.

Help Keep Glacier Bay Clean

Glacier Bay is remarkably pristine and free of litter. You can help keep the park clean and efficient. Please separate your waste into the appropriate bins in the parking lot near the public dock. Your efforts to separate recyclables make it possible for the park to reach the high record for recycling or reusing waste in its day-to-day operations.

Recycling is a serious endeavor in Glacier Bay. The park collaborates with the neighboring city of Gustavus to send shipments of aluminum, paper products, steel, tin, and most plastics to recycling centers. Park staff do a final hand-sorting of trash to ensure that all recyclable items are in recycling shipments. Locally, food waste from the park and the lodge is composted into topsoil for use in the community.

With your help, Glacier Bay National Park and Preserve will continue to achieve one of the best recycling rates in the National Park Service. We can all work together to keep Glacier Bay's environment clean and healthy.

Park rangers help protect park resources and keep visitors safe.

Park Regulations

The following is a partial listing of laws and regulations designed to help you have a safe, enjoyable visit while protecting park resources. For further information or questions on additional regulations, please ask a park ranger.

Feeding Wildlife is prohibited. All food, fish, garbage, and equipment used to cook or store food must be cached inside of a motor vehicle (not in open pickup), vessel (excluding kayaks), building, approved bear-resistant food containers, designated trash receptacle, or designated food cache.

Camping in Bartlett Cove is allowed only in the designated campground or one mile away from any road, building, or trail.

Firearms are prohibited in federal facilities. Special regulations apply when carrying firearms within Glacier Bay National Park and Preserve. Please contact the Visitor Information Station at Bartlett Cove at 907-697-2627 for further guidance.

Hunting is only permitted on the preserve lands in the Dry Bay area. All persons 16 years and older are required to hold a valid Alaska State Hunting License.

Harvesting the following for personal use and consumption is allowed: unoccupied seashells, edible berries and fruits, edible mushrooms, clams, and mollusks. State regulations apply.

NOTE: Eating clams and mussels from Glacier Bay is not recommended because of the presence of a naturally occurring neurotoxin that causes paralytic shellfish poisoning in humans and can lead to sudden death.

Pets are allowed on land in only a few select areas, may not be left unattended, and must be leashed at all times. Pets are not allowed on trails or in the backcountry. Pets are allowed on vessels on the water, on the Bartlett Cove public use dock, on the beach between the Bartlett Cove public use dock and the park headquarters dock, and within 100 feet of Bartlett Cove roads or parking areas unless otherwise posted. Clean up after pets.

Sport Fishing by all nonresidents 16 years and older and Alaskan residents 18–59 requires a valid Alaska State Fishing License, available online at http://adfj.alaska.gov. Licenses are not sold locally. Consult Alaska State Fishing regulations when purchasing a license.

FOR YOUR SAFETY

You are in a remote, isolated area. The closest hospital or trauma facility is in Juneau, 30 minutes by air. Weather conditions can delay medical evacuations or other emergency transport, sometimes for days. Plan and prepare for your trips carefully! Even for short excursions, always let someone know where you are going and what time you plan to be back.

Boating

Motorized Vessels

Permits

- Are required for private motor vessels to enter and exit Glacier Bay from June 1–August 31.
- Are free and valid for up to seven consecutive days and six nights.
- Must be confirmed 48 hours before scheduled entry date or permit will be cancelled.
- Are only valid for operation of one vessel at a time.

To confirm permits or to see if permits are available, call the Visitor Information Station "KWM20 Bartlett Cove" on marine band 16 or phone 907-697-2627. Permit applications are accepted 60 days before the intended entry date and are available at www.nps.gov/glba. From May 1 to September 30, all vessels must call in to KWM20 prior to entering and also when exiting the park.

Docks

Bartlett Cove Dock:

- Vessels may dock for a maximum of 3 hours in a 24-hour period. After that, anchor out beyond the white "no wake" buoys.
- Dinghies 10 feet or less may dock in the designated area for up to 24 hours.
- Do not leave vehicles or personal property unattended on docks.
- Use only slips designated for your use. See dock bulletin board.
- Potable water is available on the dock.

Fuel Dock:

- For hours, call Glacier Bay Lodge on marine band 16 or phone 907-697-4000.
- Fuel is available during the Glacier Bay Lodge operating season.
- Access to shore via the fuel dock is not permitted.
- Do not leave vessels unattended at the fuel dock.

Anchorages

- Boat operators should carefully consult their charts when choosing an anchorage.
- Anchor in water deep enough to remain afloat at low tide.
- Safety depends on ice, wind, and tide conditions.
- Please do not raft or anchor next to the South Sandy Cove Ranger Raft.
- Boats at North Sandy Cove, Reid Inlet, and Blue Mouse Cove may not run generators or any other non-propulsive engines between 10 p.m. and 6 a.m. except when using a windlass.

Be Careful on the Water

Closures

Areas designated as Critical Wildlife Areas are off limits to entry and landings for all or part of the year. In summer, some areas are off limits to motorized vessels—including sailing vessels with auxiliary motorized propulsion, even if not in use. Know and obey all closures. See Guide to Park Waters, pages 20–21.

Cruise Ships

No more than two cruise ships are permitted in the park per day. These large vessels cannot turn quickly and may take miles to stop. Do not approach them when they are stationary in front of the glaciers. Do not get in their path and do not assume they see you. Watch for large wakes from ships. These waves can reach the beach over 10 minutes after the ship has passed.

Currents & Winds

The forces of tides, currents, and wind can combine in certain places to create dangerous conditions. Areas that may require extra caution include Sitakaday Narrows, Beardslee Entrance, McBride Entrance, Berg Bay, and the north shore of Adams Inlet. Plan crossings of wide channels carefully. Be prepared to change your route or wait for dangerous conditions to subside.

Glaciers & Icebergs

Suddenly approaching tidewater glaciers closer than ¼ mile is not recommended. Glaciers can calve from above and below the waterline. Underwater tongues of ice can also break off and shoot to the surface.

Maps and Charts

Topographic Maps:
Trails Illustrated Map by National Geographic 1:250,000
USGS Quadrangles 1:63,360
Nautical Charts:
17300 Stephens Passage to Cross Sound
17318 Glacier Bay
17302 Icy Strait and Cross Sound
17301 Cape Spencer to Icy Point
16762 Lituya Bay

Kayaking gives vistiors a unique perspective of Glacier Bay.

Tides

Beware of extreme high tides. Secure boats, kayaks, and gear well above the high tide line. Some waterways are tide dependent and may only be passable at high tide.

Landslide Potential

Many of Glacier Bay's steep mountainsides are unstable. Landslides may occur at any time, potentially resulting in large waves in narrow inlets and along shorelines.

Weather

May through September, weather forecasts are posted daily on the VIS bulletin board. Rangers broadcast the marine forecast and important notices over marine band 9 at approximately 8:45 am and 4:45 pm daily (May and September) and 8:45 am and 5:45 pm daily (June–August).

In the Case of an Emergency

Call by phone (907-697-2651) or by radio on marine band 16 (state "Mayday, Mayday, Mayday").

NOTE: Radio coverage in the bay is spotty, and cell phone coverage is nonexistent. If needed, hail another boat nearby to relay messages.

If you have no radio, wave a large brightly colored item toward a passing boat. Tie this item to a stick, oar, or kayak paddle for greater visibility.

Weather & Tides

Glacier-Making Weather

Glacier Bay has a maritime climate, heavily influenced by ocean currents. The result is mild winter temperatures and cool summer temperatures near sea level. Summer visitors can expect highs between 50° and 60° degrees Fahrenheit (10–15 degrees Celsius). Winter temperatures rarely drop into the single digits, with average nighttime lows in the mid 20s and highs in the upper 30s.

Bartlett Cove receives about 70–75 inches of precipitation annually. You may find yourself thinking it's all coming down during your visit. April, May, and June are usually the driest months of the year, while September and October tend to be the wettest. All this moisture helps to create the lush temperate rainforests of the lower bay.

Keep in mind, these are weather conditions at sea level. Conditions are more severe up in the mountains, with colder temperatures and more precipitation that takes the form of snow. All that snow falling year after year goes into creating the glaciers we love to see.

What to Wear?
The weather in Glacier Bay can change quickly over the course of the day, especially if you are traveling into the bay. Dressing appropriately will enhance your trip by allowing you to stay out in the elements and make the most of wildlife and glacier viewing.

Wool and synthetic clothing such as fleece will keep you warm even if the clothes are damp. Cotton is not an ideal fabric choice. Always have raingear with you. Remember, it's usually cooler on the water and near glaciers. Bring extra layers for warmth.

When you have clothes and gear to keep you dry and comfortable, you can appreciate the wonders of Glacier Bay no matter the weather!

Be prepared for wet and cold weather in Glacier Bay!

Hypothermia—Killer Cold

In the backcountry, good rain gear is a must. Staying dry will help you stay warm as wet clothing can wick away body heat and lead to hypothermia—the lowering of the body's core temperature. Hypothermia can kill if action is not taken to prevent further heat loss.

Prevention and early recognition are vital to safe camping. A victim of hypothermia may not realize his or her condition, and will often deny being cold or needing help.

Early Symptoms: Violent shivering, changes in mood or consciousness, irritability, cool, pale skin, slow or weak pulse, slow, shallow breathing.

Advanced Symptoms: Absence of shivering, unconsciousness.

Treatment: Provide shelter from cold, rain, wet ground, and wind. Replace wet clothing with dry synthetic clothing. Techniques to stay warm include:

- Wrap patient in space blanket, sleeping bag, or ground cloth.
- Wrap warm water bottles in cloth and place in the sleeping bag with patient.
- Provide close contact with another warm person.
- Build a fire.
- Feed patient sugars, carbohydrates, or sweet warm drinks.
- Keep patient awake.

DO NOT: Give alcohol, rub or massage the affected area, or expose to excessive heat.

Twice a day, an amazing world is exposed by the changing tides. The intertidal zone is full of life uniquely adapted to this area between high and low tide.

Tides

The tidal fluctuations in Glacier Bay can be as high as 25 feet. This means that one moment you may be standing on the beach looking at mud flats stretching out for 100 yards and hours later the water is lapping at your toes. Or worse: one minute you've pulled your kayak up on shore so you can enjoy lunch, but you wake up 30 minutes later from your post-lunch nap to see your kayak floating away.

You hardly need to spend more than six hours in Bartlett Cove to realize that there is something interesting going on with the tides.

Tides result from the gravitational pull between the sun and the moon, and their relationship to the Earth. As these three celestial bodies are constantly in motion, the amount of gravitational pull varies, and the tide levels change. Since the moon is closer, it has the strongest influence on the tides. Its gravitational attraction causes the water surrounding the Earth to bulge. It bulges on the side closest to the moon due to gravitational pull.

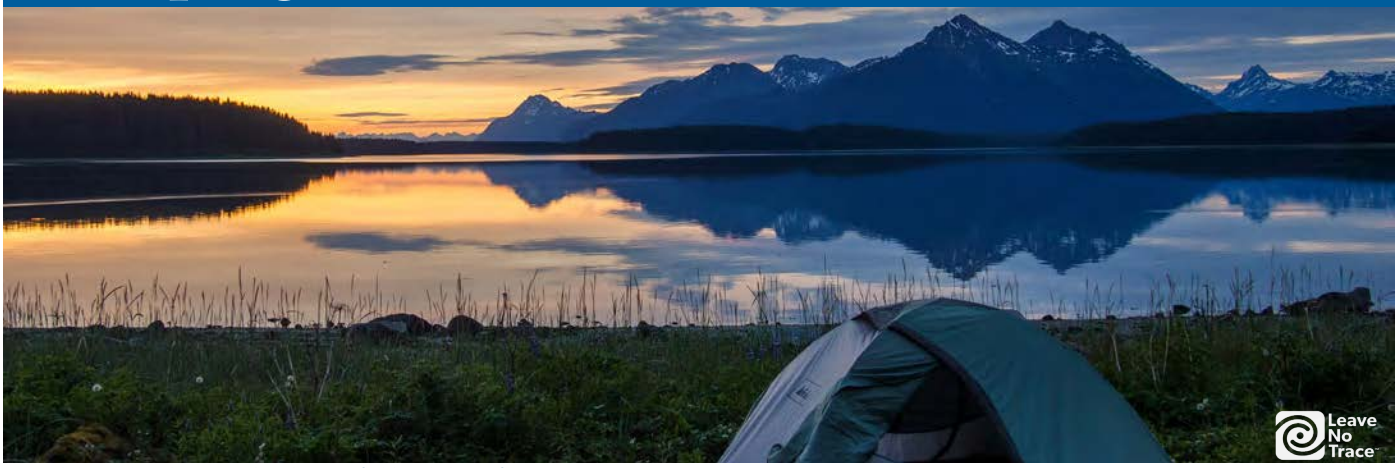
There are usually two high and two low tides daily on the West Coast. The times for highs and lows shift about 50 minutes later on subsequent days. This means if high tide is at 9:00 a.m. one day, it will be high at about 9:50 a.m. the next day, around 10:40 a.m. the next, and so on.

Local conditions, such as topography, also influence the tides and the currents they generate. The entrance to Glacier Bay is narrow, yet a great deal of water must rush through that opening twice daily, creating currents in Sitakaday Narrows as strong as seven knots.

To see this incredible force in action, walk down to the water's edge about three hours after high or low tide. Fix your gaze on a shell or a piece of seaweed and watch how its proximity to the water's edge changes in just minutes. Be sure to keep that in mind when you decide to enjoy an after-lunch nap on your next paddling adventure.

This huge iceberg was stranded on the beach by the outgoing tide.

Camping



Beardslee Islands provide a beautiful backdrop for any campsite.

Take Care of Your Park

By practicing Leave No Trace Principles we help to ensure that future generations can enjoy Glacier Bay in the same condition as it is today.

Plan Ahead and Prepare

- Have the appropriate charts, maps, and navigation tools.
- Allow time for a thorough camper orientation prior to obtaining your permit.
- Be familiar with park regulations and unique concerns for the area.
- Prepare for extreme weather, hazards, and emergencies.

Travel and Camp on Durable Surfaces

- Do not camp within 100 feet of a stream or lake.
- Leave your campsite as natural as you found it.
- A good campsite is FOUND and not MADE.

Dispose of Waste Properly

- Pack it in—pack it out.
- Keep all trash in a bear canister.
- Deposit human waste either in a hole dug at least six inches deep in a location at least 100 feet from any freshwater source or in the intertidal zone (below high tide line), allowing the tide to remove the human waste.
- Toilet paper must be burned or carried out.

Leave What You Find

- Unoccupied shells and berries or plants may be collected for personal use or consumption.
- Collection of rocks, flowers, bones, or other artifacts is not allowed.
- For lasting memories, take pictures or make sketches.

Minimize Your Campfire

- Avoid the need for a campfire. Use a cook stove.
- Campfires are permitted below the high tide line. Break up any campfire rings before leaving the site.
- Burn only dead and downed wood. Do not burn interglacial wood, which comes from the exposed remnants of ancient forests found on certain beaches within the bay. Ask a ranger for details.

Be Considerate of Others

- Avoid camping near other parties.
- Keep your camp and activities as inconspicuous as possible.
- Groups larger than 12 are not allowed.

Respect Wildlife

- Choose a campsite that shows few signs of wildlife.
- Watch carefully for and avoid ground nesting birds.
- Cook and eat in the intertidal zone at least 100 yards from your campsite.
- Never leave food unattended.
- Store all food and scented items in a bear canister in brush or behind rocks at least 100 yards from camp, not in your boat or kayak.

Don't Forget to Check In!

If you fail to check in at the VIS, rangers will begin a search the day after your scheduled return, starting with the areas indicated on your permit.

Backcountry camping allows visitors to discover the wilderness of Glacier Bay.

In the Backcountry

A free permit is required between May 1 and September 30. Certain parts of the bay are closed to campers, either permanently or temporarily, due to animal activity or resource protection. Ask a ranger at your camper orientation about any current advisories.

Park Campground

A free, walk-in tent campground is located at Bartlett Cove. You must register for a site at the VIS. Wheelbarrows are available to help haul gear between the VIS, dock, and campground. Drinking water is available near the VIS. Please observe the following:

Tent sites in the walk-in campground are located in the temperate rainforest.

- Store all food, trash, and scented items in the caches provided in the campground.
- Cook, prepare, and eat food only in the intertidal zone next to the campground. Never eat or cook in the campground or warming shelter.
- Dispose of trash and recyclables in appropriate bins near the VIS.
- Fires are permitted only in the designated campground beach fire ring.

Arriving on the Ferry

The Alaska Marine Highway ferry system provides service from Juneau throughout the year.

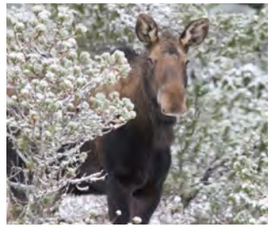
Although this option affords both visitors and residents many new opportunities to travel with a personal vehicle, you may not find all the services and amenities one might expect in other road-linked Alaska communities. If arriving with a vehicle be aware that:

- Glacier Bay National Park is essentially roadless. Bartlett Cove is accessible by vehicle from Gustavus, but all other areas may only be reached on foot, by boat, or by small aircraft.
- National Park facilities in Bartlett Cove were not designed to accommodate visitors with private vehicles, and parking may be limited.
- There is one primitive campground in the park. It is accessible on foot only.
- There are no RV facilities (sites/dump station/hookups/etc.) or vehicle camping areas within the park. Camping is not permitted in parking areas or along the park road.
- For the latest updates on park facilities call 907-697-2230 or visit www.nps.gov/glba
- There are various lodging and other services available in Gustavus. For more specific information please contact the Gustavus Visitors Association at www.gustavusak.com.

Wildlife

When the ice retreated in Glacier Bay, it left behind a scoured landscape of rocks and a deep valley filled with ocean water. In time, plants returned to the seemingly sterile land. Eventually, animals returned to the land and waters. Today, a wide diversity of life calls Glacier Bay home. As you explore Glacier Bay, keep your eye out for some of these more frequently seen members of the community. As you admire Glacier Bay's wildlife, be respectful of the animals' home.

By Land



Moose

Alces alces

The largest member of the deer family is a recent newcomer to Glacier Bay. The first moose was spotted here in the late 1960s. Despite their tremendous size (bulls can weigh 1,600 pounds and cows 1,300 pounds), they can appear and disappear in thick brush with surprising stealth. Moose are usually solitary, except for cows with calves and during the fall rutting season. Their diet includes willow leaves, grasses, herbs, and aquatic vegetation. Only bulls grow antlers.

Mountain Goat

Oreamnos americanus

Mountain goats have thick white coats of hollow hairs that help to keep them warm in extreme weather. Goats may have been among the first land animals to recolonize Glacier Bay after the ice retreated, coming over the mountains from Lynn Canal to the east. They are at home on the steep rocky cliffs in the mid-to-upper bay.

Black Bear

Ursus americanus

Black bears inhabit the forests of the lower bay and Bartlett Cove and can often be seen grazing in the beach meadows. They have a straight facial profile and prominent ears. Black bears lack the distinctive shoulder hump of brown bears. Black bears stand about three feet high at the shoulder and weigh 125 to more than 300 pounds. Though they are often black, they may be brown, blonde, or even blue-gray.

Porcupine

Erethizon dorsatum

You may find this prickly member of the community high up in a cottonwood tree nibbling tasty tender leaves. Except for their footpads and nose, porcupines are completely covered with yellowish fur and quills, which are actually modified hairs tipped with barbs. A threatened porcupine will turn its back-end toward the source of trouble to present an intimidating display of quills that firmly suggests the would-be predator reconsider its dinner plans.

Red Squirrel

Tamiasciurus hudsonicus

If you see a little red flash zipping up a tree trunk or leaping nimbly among the branches, chances are it is a red squirrel. These agile rodents spend their summer preparing for winter by collecting and storing green spruce cones in their middens, mounds of cones at the base of a tree. A red squirrel can harvest 12,000 to 16,000 spruce cones a year.

Brown Bear

Ursus arctos

Brown bears are most often seen on the beaches or sparsely vegetated hillsides of the upper bay. though they are present throughout the park. Brown bears, also called grizzlies, have a prominent shoulder hump and a curved, "dish-shaped" facial profile. When on all four legs, brown bears stand about three and a half feet tall, but can tower more than nine feet when standing upright. They can weigh between 500–1,000 pounds and range in color from honey blonde to dark brown and black.

By Sea

Humpback Whale

Megaptera novaeangliae

Of all the whale species, humpbacks are the favorite of whale watchers, as they exhibit a variety of displays such as breaching (leaping out of the water) or slapping the ocean surface with their pectoral flippers or their tails. Humpback whales are most easily spotted by their blow. This distinctive mist occurs when whales exhale warm air into colder air. Though they are extremely large animals, most observers of this whale see only the dorsal fin when they come to the surface to breathe air.

Harbor Seal

Phoca vitulina richardsi

Harbor seals have a dappled gray coat that can be highly variable between individuals. A thick layer of fat allows them to keep warm in otherwise chilling conditions. On ice floes, they resemble plump sausages that move around by scooting on their ample bellies. In the water, they display admirable grace as they hunt for fish.

Steller Sea Lion

Eumetopias jubatus

Like all members of the eared seal family *Otariidae*, Steller sea lions can support themselves on their flippers while ashore, and their rear flippers pivot, allowing them to get around with surprising speed. Mature males can weigh almost 2,000 pounds, though females average only 600 pounds. The number of sea lions is growing in Glacier Bay, but the population in Western Alaska has decreased by 80 percent since the late-1970s—leading to that portion of the population's current listing as endangered.

Orca

Orcinus orca

Often called a killer whale, orcas are the largest member of the dolphin family. With striking black and white coloration, killer whales are easy to identify from other cetaceans. Male killer whales can attain lengths of 32 feet and weigh up to 9 tons. Females are much smaller, reaching 23 feet and weighing about 4 tons. Males have a tall, straight triangle dorsal fin, while female dorsal fins are curved and shorter. Orcas may be observed throughout Glacier Bay, alone and in small pods.

Sea Otter

Enhydra lutris

The Glacier Bay sea otter population has rebounded from zero to almost 9,000 in the last 20 years. Sea otters perform many of their daily tasks such as eating, bathing, and sleeping while floating on their backs. Lacking a thick layer of blubber, otters instead have the densest fur of any mammal with up to one million hairs per square inch.

Harbor Porpoise

Phocoena phocoena

At five feet long and about 120 pounds, harbor porpoise are the smallest cetaceans in Alaska waters. Often seen in groups of two to ten throughout the bay, they announce themselves by offering a brief glimpse of their small triangular dorsal fin cutting slowly through the water's surface when they come up to catch a breath. Harbor porpoise are generally dark gray with a slightly pointed face. They do not ride bow waves, like their relative the Dall's porpoise.

Be Bear Savvy

While walking, hiking, or camping in Glacier Bay, you may encounter a bear. The vast majority of these encounters do not result in human injury or property damage. You can help prevent injury to yourself or to the bear by taking a few basic precautions.

- Be alert.
- If you carry bear spray, know how to use it.
- Be aware of what goes on around your campsite.
- Make noise, especially in wind or near rushing water.
- Choose routes that offer good visibility.
- Travel in groups of two or more.
- Keep your personal items and food within reach.
- Do not pursue or approach bears for photographs.
- Avoid streams with spawning fish.

Fishing the Bartlett River

- Harvested fish must be kept within 6 feet of person.
- All harvested fish must be packed out whole, except for gills and entrails which should be disposed of in the deepest and fastest current of the stream.
- If a bear approaches while you have fish on the line, cut the line.
- Never yield your catch or other food items to a bear or other wildlife.

Mother bears are protective of their cubs.

Be a Smart Camper

Both campers and bears frequent the beaches of Glacier Bay. Bears only have six to eight months to acquire the calories and fat reserves needed for the entire year, and the shoreline is essential for food and travel. The following guidelines will minimize your disruption of bears and help keep them wild.

Cooking and storing food

- Cook and eat in the intertidal zone at least 100 yards from your tent and food storage area.
- Wash cooking gear in marine waters.
- Be prepared to quickly stow all food should a bear suddenly approach.
- Keep all food, trash, and other scented items in a bear-resistant food container (BRFC).
- At night, store BRFCs and clean cooking gear in brush or behind rocks away from animal trails, 100 yards from camp, and not in your kayak.

Choosing a campsite

- Avoid areas with recent signs of bear activity, including an abundance of scat, animal trails, and chewed or clawed trees.
- Avoid active salmon streams.
- Store your kayak and pitch your tent clear of the beach.
- Select a site that would allow bears room to pass at high tide.

Control your gear

- Maintain a clear view of your gear. The more spread out your gear is, the more difficult it is to defend.
- To minimize potential bear damage to gear, consider breaking down your campsite daily.

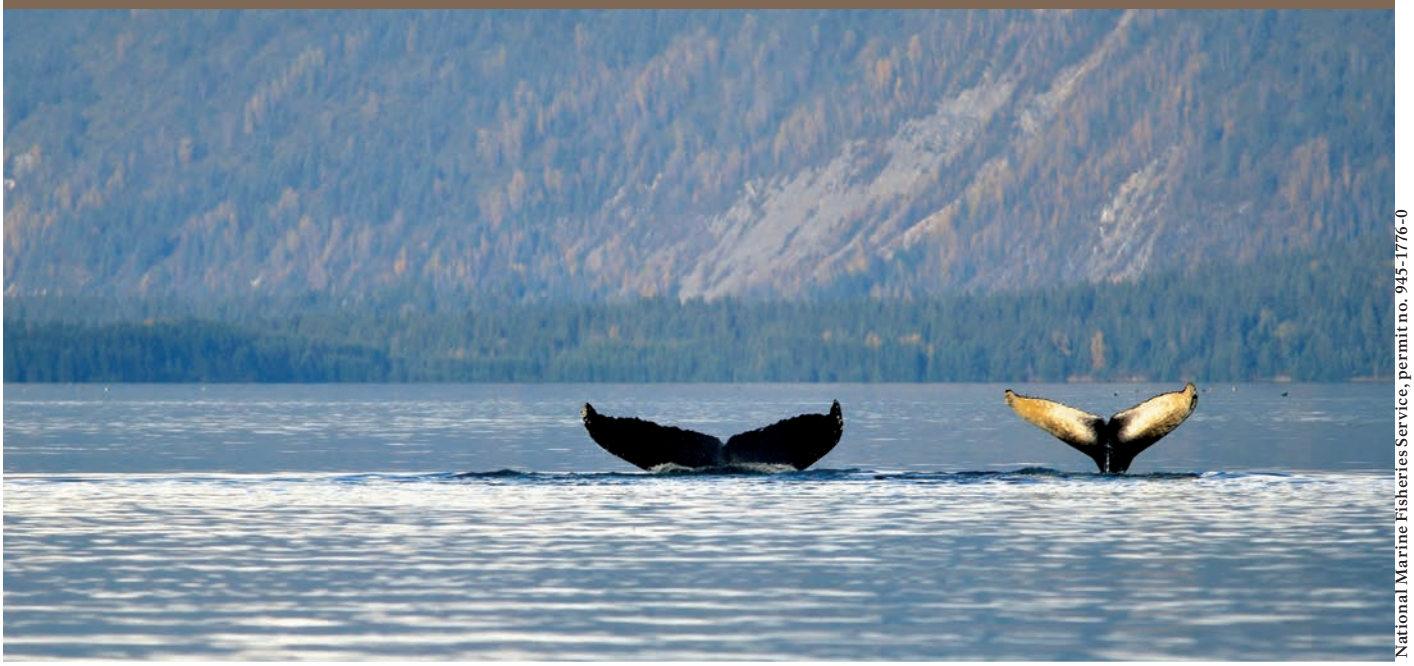
When encountering humans, most bears will run away, approach curiously, appear to ignore the situation, or act defensively. By staying alert, calm, and tailoring your reaction to the bear's behavior and species, you increase the odds of a positive outcome for both you and the bear.

If You See a Bear

The Bear	What You Can Do	
May or may not be aware of you	*What is your activity and degree of mobility?* *You are hiking or kayaking (mobile):* • Change your course to avoid bear. • Monitor bear's movement. • If bear is close, talk calmly to avoid surprising it.	*You are camping or eating (not mobile):* • Keep all gear under direct control. • Group together without blocking bear's route. • Talk calmly to make bear aware of you. • Stand your ground.
Moves toward you	• Monitor bear's movement. • Stand your ground and talk calmly. • Allow bear to pass peacefully.	
Becomes focused on you	• Stay together and stand your ground. • Be assertive and elevate your defense: clap your hands, wave your arms, use noisemakers such as air horns, or bang pots together.	
Charges	• Continue to stand your ground and look big. • Use bear spray if you have it. • Few charges end in contact.	
If a bear makes contact	• Fight back vigorously. • This is likely a predatory attack.	
Enters your tent	• Fight back.	

If You Surprise a Bear

The Bear	What You Can Do
May react defensively and may snort, huff, pop its jaw, or charge	• Stand your ground and talk calmly to the bear. • Attempt to move away slowly.
Begins to follow you	• Stand your ground.
Charges	• Use bear spray.
Is a brown bear and makes contact	• Play dead—lie flat, face down on the ground, and lace your fingers behind your head. Do not move.
Is a black bear and makes contact	• Fight back vigorously. • This is likely a predatory attack.



National Marine Fisheries Service, permit no. 945-1776-0

Biologists recognize individual whales by photographing the black and white patterns on tail flukes. These patterns remain the same throughout the whale's lifetime.

Glacier Bay Is Home for Humpback Whales

Seeing a humpback whale in Glacier Bay is a highlight for many visitors. Humpbacks are huge: 40–50 feet (12–16 m) long—the size of an average school bus—and weigh over 35 tons (32,000 kg). Most Southeast Alaska humpbacks migrate to Hawaii each winter to mate and give birth, a 2,500-mile (4,000 km) journey that takes about a month. Throughout the winter, humpbacks do not eat. During the summer, whales feed on high-calorie, small, schooling fish such as capelin and sand lance. Biologists have identified over 745 individual humpbacks in Glacier Bay and nearby Icy Strait since the 1970s, including some with sighting histories spanning 45 years.

Humpback whale populations worldwide increased steadily after commercial whaling ceased in the 1960s. Whales thrived and, as a result, the Hawaii breeding population of humpback whales from the Endangered Species List in 2016. However, unusually warm water in the Northeast Pacific Ocean in 2014-2016 (commonly referred to as a marine heatwave or "The Blob") caused widespread disruption of the marine ecosystem, including declines in the humpback whale population. From 2013-2018, Glacier Bay's whale monitering program documented a 58% drop in whale numbers, along with very few calves and many malnourished whales. Some whales that had returned to the area for decades either changed their summer migratory pattern or died. Scientists have since discovered that the heatwave caused significant changes in the quanity and quality of food available to marine predators like whales. The good news is that in 2019, whale counts in Glacier Bay started to bounce back and some whales that had been missing since the heatwave returned. Glacier Bay's whale researchers will continue to monitor the population and share information to protect these magnificent creatures.

Read annual humpback whale population study reports at https://www.nps.gov/glba/learn/nature/whale_acoustic_reports.htm.

Biologists have monitored humpback whales in Glacier Bay for over 35 years.

Whale Watching

To minimize disturbance to humpback whales, Glacier Bay National Park and Preserve has developed some of the most protective boating rules visitors will find anywhere. Because the park's mission is to protect and preserve these magnificent creatures, we maintain strict operating and speed restrictions to reduce risk of disturbance and collision.

Rules for All National Park Waters

All vessels, including kayaks, must not:

- Operate within ¼ nautical mile of a humpback whale.
- Pursue a humpback whale within ½ nautical mile by altering course or speed in a manner that results in decreasing the distance between the whale and the vessel.

Whale Waters

These are special areas in Glacier Bay that require additional speed and operating restrictions. These critical areas change depending on current whale activity in the bay. See Guide to Park Waters on page 20 for areas and dates that regulations are in effect and check at the VIS for additional temporary restrictions before setting out.

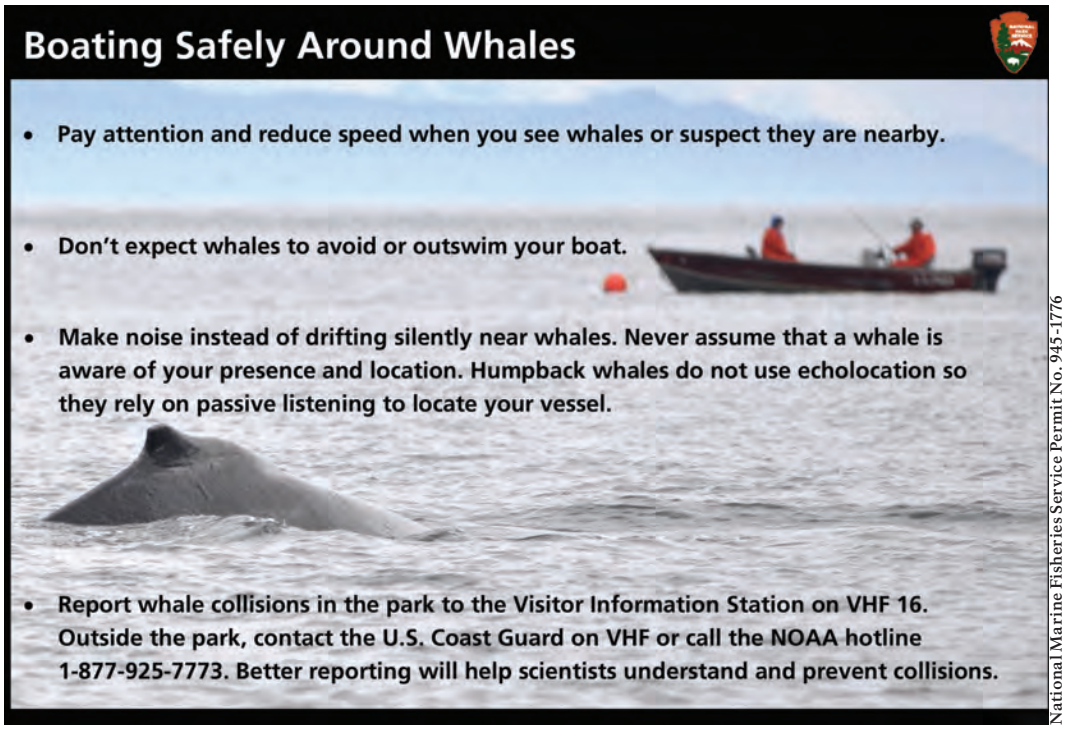
Rules for Lower Glacier Bay Whale Waters (May 15–Sept 30)

All vessels must operate within speed restrictions. Motorized vessels over 18 feet in length must:

- Maintain a distance of at least one mile from shore. In narrower areas, navigate a mid-channel course (unless fishing or operating solely under sail).
- Approach or land on shore perpendicularly, taking the most direct line to and from shore.
- Watch for additional whale waters designations in other areas. Check at the VIS for current whale waters boundaries and regulations.

What do you do if a whale suddenly appears in front of you?

If your vessel is accidentally positioned within ¼ nautical mile of a humpback whale, immediately slow your vessel to ten knots or less. Don't shift into reverse unless impact is likely. Then, carefully direct or maintain your course away from the whale until at least ¼ nautical mile separation exists.



National Marine Fisheries Service Permit No. 945-1776

Protect Wildlife

Life's No Picnic

You are picnicking on an idyllic beach when a boat roars up out of nowhere. It stops just offshore from you. Its wake washes the beach, taking away your lunch. People on the boat laugh and talk loudly. Camera flashes explode. You drop your food and dash off into the bushes, anything to get away.

You have just experienced what happens to wildlife when thoughtlessly approached by humans. The effects can be devastating. Steller sea lions tumble over one another as they stampede into the water, female harbor seals lose their newborn pups among the ice floes when they become separated. Breeding birds flushed from nests leave eggs vulnerable to cooler temperatures and predators.

To reduce disturbance to wildlife and protect sensitive areas, the park has regulations that define the minimum distances you must keep from animals in Glacier Bay. Be aware of closures (see map on pages 20–21). In all situations, be aware and respectful. Remember that even if you maintain a legal distance, if an animal changes its behavior due to your presence, you are too close.

As you admire Glacier Bay's wildlife, keep in mind that every day they struggle to find what they need to eat, reproduce, protect their young, and prepare for winter as they avoid becoming food for others. Indeed, life is no picnic for the wildlife of Glacier Bay.

Harbor Seals

Harbor seal numbers have declined in Glacier Bay over the past 20 years. Help protect seals by travelling slowly and watching for them in the water and on icebergs Seals can be disturbed by boats even at a great distance. In Johns Hopkins Inlet you must stay at least ¼ mile away from seals on ice.

Steller Sea Lions

Although numbers have increased here over the past 20 years, some in Glacier Bay are from the endangered Western stock. Stay at least 100 yards away from sea lions on land, and keep your distance from those in the water, too.

Nesting Birds

Many birds nest on the ground and are extremely vulnerable to disturbance! If a bird dive-bombs or makes repeated alarm calls, you are close to a nest. Watch your step to avoid crushing eggs or chicks, and move away to avoid disturbing the parents guarding the nest. You must stay at least 100 yards away from nesting seabird colonies, and several islands are closed to foot traffic (see map on pages 20–21).

Humpback Whales

Whales can be startled by boats, even bumping or capsizing them. For your safety and to avoid disturbance, regulations require that you stay at least ¼ mile away from whales. Whales can move surprisingly fast, so if one surfaces near you, it is recommended to make some noise by knocking on your boat.

Black and Brown Bears

All of Glacier Bay is bear country! Bears may appear anywhere at any time. Enjoy bear viewing from a safe and respectful distance. Even in your kayak, don't approach swimming bears or bears on shore.

Black oystercatchers nest on rocky beaches. Keep your distance!

For Teachers

Using technology, Ranger Emma brings Glacier Bay to a classroom in Arizona.

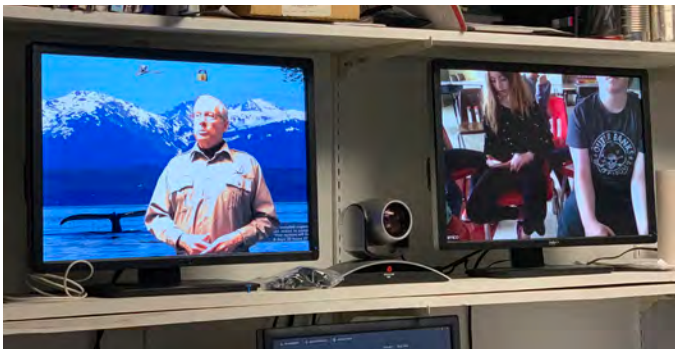
Take Your Class on a Trip to Glacier Bay

Last year, hundreds of students and teachers visited Glacier Bay National Park in the heart of winter without ever leaving their schools. Kindergartners spotted bears and sea otters, fourth graders catalogued humpback whale behaviors, and high school students explored the wide range of careers with the National Park Service. These students all visited Glacier Bay virtually, using videoconferencing equipment to connect Glacier Bay rangers to classrooms across the country.

Glacier Bay offers a variety of interactive, curriculum-based distance learning programs. Programs cover a variety of Glacier Bay topics and are grade appropriate. All programs encourage students to ask questions and interact with a park ranger. Sometimes students even earn a Junior Ranger sticker!

Distance learning programs are offered in the winter months. Programs are free and registration starts on October 1 each year. To register for a program or receive more information, email the Glacier Bay Education Team at glba_education@nps.gov. You can also visit the Center for Interactive Learning and Collaboration (CILC) website at www.cilc.org. Search for programs offered by Glacier Bay and click "Request this Program Now." Additionally, teachers may register for programs by phone at 907-697-2573.

For a list of programs and ranger contact information, visit www.nps.gov/glba and look at the "For Teachers" section and then click the "Distance Learning" tab. We look forward to connecting to your class!



Ranger Steve answers questions about Glacier Bay from students.

For Kids

Ask a ranger about family-friendly guided ranger programs and activities in Bartlett Cove and check the schedule for our summer youth activities.

Kids Love Glacier Bay

Are you ready to begin your Junior Ranger adventure? If you are between the ages of two and 200, you may want to become a Junior Ranger during your visit. There are two ways to pick up your Junior Ranger Activity Booklet.

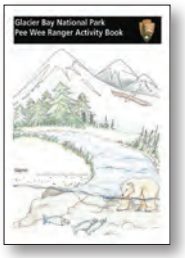
If you came by plane or boat to Bartlett Cove, stop by the NPS Visitor Center on the second floor of the Glacier Bay Lodge or the VIS.

If you are on a tour boat or cruise ship, meet with the ranger on board.

The National Park Service extends a special invitation to 4th graders to visit a National Park. Thank you for visiting Glacier Bay!

www.everykidinapark.gov

Glacier Bay offers three different booklets, depending on your age:



For children between the ages of 2–6, we have the *PeeWee Ranger Adventure Guide*.

For children between the ages of 6–12, pick up the *Junior Ranger Adventure Guide*.

Final Steps

When you have completed the activities, bring your booklet to a ranger, and you will be awarded a special badge that makes you a Glacier Bay National Park Junior Ranger.

Stay Connected

As the official nonprofit education partner of Glacier Bay National Park and Preserve, Alaska Geographic connects people with Alaska's magnificent wildlands through the creation and delivery of exceptional educational products and programs. Alaska Geographic supports youth camps and expeditions, mentorship, stewardship projects, and adult field courses. Together with public land partners, Alaska Geographic is dedicated to sharing Alaska's rich natural and cultural heritage.

Alaska Geographic operates stores across the state, including several locations in Glacier Bay National Park and Preserve: at the NPS Visitor Center and Visitor Information Station in Bartlett Cove, and on board the dozens of cruise ships that visit the park each year. A portion of every purchase made at an Alaska Geographic store stays in this park to fund educational and interpretive programs and projects.

Since 1959, Alaska Geographic has donated more than $20 million to Alaska's public lands. Please consider supporting Alaska's public lands by becoming a member of Alaska Geographic.

To learn more about our work and the benefits of membership, or to browse our selection of Alaska books, maps, and films, visit one of our stores or point your web browser to *akgeo.org*

Alaska Geographic

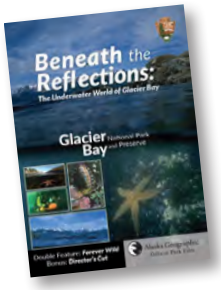
GLACIER BAY NATIONAL PARK & PRESERVE

Pins, patches, hats, and other products featuring this unique Glacier Bay design are available exclusively from Alaska Geographic.

To Learn More

Visit the Alaska Geographic Park Stores at the park Visitor Center and Information Station in Bartlett Cove to find the best books, maps, films, and gifts related to the natural and cultural history of Glacier Bay National Park and Preserve.

Glacier Bay National Park and Preserve
Meet the bold explorers who trekked glacier and waterways, scientists who study the best landscapes, and the Huna Tlingit who have lived in Glacier Bay since time began.
Item #12806, 60 pages



Beneath the Reflections DVD
Travel into the dark underwater world of Glacier Bay where perpetual snowfall and swirling currents shape the abounding patterns of life. Then, explore the natural and cultural history of the bay in the bonus feature, *Forever Wild*.

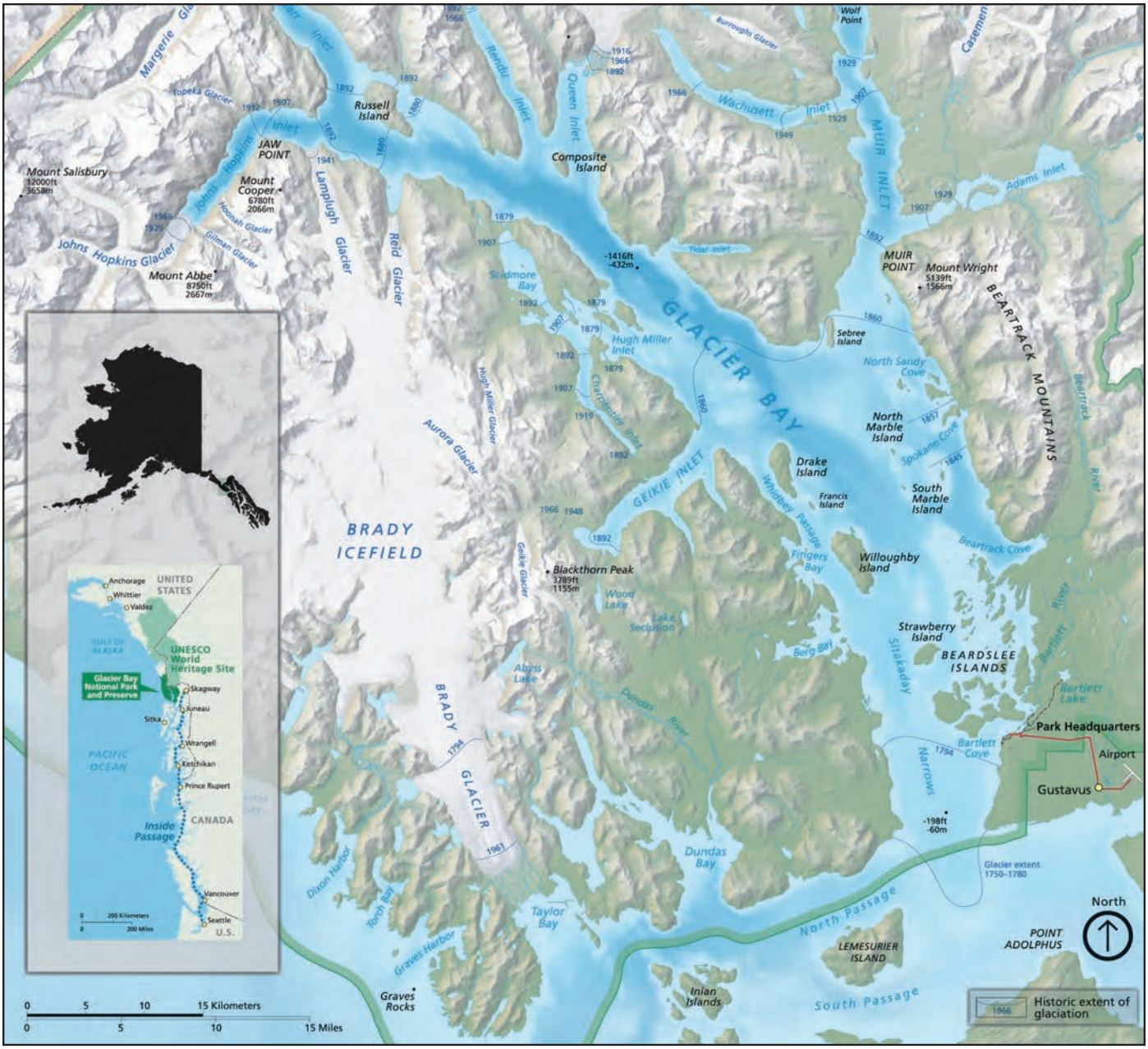
Item #480006, 45 min.

Glacier Bay Topographical Map
Scale: 1:94,000
This sturdy waterproof and tear-resistant topo map is an excellent planning resource for hiking, camping, fishing, or hunting. The map denotes elevations, hiking trails, campgrounds, cabins, and provides a synopsis of public land protocols and restrictions.

Item #35073001

Glacier Bay Flash Drive
Over 300 photos
Create your own wildlife, glacier, and wilderness scrapbook by downloading exquisite, high-resolution photos taken in the park by local photographers. Informative captions accompany each photo.

Item #30221



For More Information

Glacier Bay National Park & Preserve
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Gustavus, AK 99826
907-697-2230
www.nps.gov/glba
glba_administration@nps.gov

facebook.com/GlacierBayNationalPark

twitter.com/GlacierBayNPS

instagram.com/glacierbaynps

FIND YOUR PARK
FINDYOURPARK.COM

Emergency and Medical Assistance

Emergency Inside the Park

907-697-2651
Radio on marine band 16.
There is no cell service in Glacier Bay.
Local-use phone available at Visitor Information Station.

Emergency Outside the Park

Gustavus Emergency Response
Dial 911

Other Medical Assistance

Gustavus Community Clinic
42 Dolly Varden Lane, Gustavus
907-697-3008