

# Glacier Bay

National Park Service  
U.S. Department of the Interior

Glacier Bay National Park & Preserve  
Alaska



*Dear Student:*

*Thank you for your interest in Glacier Bay National Park and Preserve. Hopefully, this letter will assist you in your studies of this fascinating place.*

## **History:**

For thousands of years, Tlingit (pronounced *klink-it*) Indians and their ancestors have lived in or near what is now Glacier Bay National Park. Animals and plants from the forest and sea provided food, shelter and clothing, and the abundance of the land gave these people the spare time to develop a rich and diverse culture. Near the end of the Little Ice Age (about 400 years ago,) advancing glaciers forced one group of Tlingits to abandon their village that was located in what is now the lower part of Glacier Bay.



**Johns Hopkins Glacier**

Covered and uncovered by alternate periods of glacial advance and retreat (*such as that described by the Tlingits*), today's Glacier Bay was but a small indentation in the coastline when Captain George Vancouver charted this area in 1794. The ship's log describes "a compact sheet of ice as far as the eye can see." Scientists speculate that a general warming trend occurred at this time, beginning a period of glacial retreat that proved to be one of the most rapid on record. Massive pieces of ice calved (*fell away*) from the face of the glaciers into the seawater, eventually uncovering a 65-mile-long system of fjords, inlets and coves explored by visitors today.

The world knew very little about Glacier Bay until 1878, when naturalist John Muir, four Tlingit guides and a Presbyterian missionary came here in a sea canoe. Navigating with Captain Vancouver's map, Muir discovered the ice front had moved back 40 miles from where Vancouver's survey party saw it just 85 years before. John Muir was fascinated by the icy wilderness he saw and returned four times throughout his lifetime to study the glaciers and the newly uncovered land. Soon, tourists and scientists began to visit the area. The bay became a natural laboratory to learn about the past ice ages, as one could study the moving glaciers and observe the types of plants and animals that colonize areas after the glaciers receded.

Dr. William Skinner Cooper, an ecologist from the University of Minnesota, is credited as Father of the Park. Dr. Cooper came to the area to study the plants that first began growing in the rocky, barren soils newly uncovered by the ice. His research impressed the Ecological Society of America, which eventually helped Dr. Cooper convince President Calvin Coolidge to proclaim Glacier Bay as a national monument in 1925.

The mountain, forest, and marine landscapes; the scientific importance of glacial retreat; and rapid plant and animal succession served as criteria for the establishment of Glacier Bay National Monument. Enlarged to 2.7 million acres in 1939, the monument was again enlarged in 1980 with the passage of the Alaska National Interest Lands Conservation Act (ANILCA.) ANILCA designated Glacier Bay as a national park of 3.3 million acres. An additional a 57,000-acre preserve was established in part to provide for certain traditional, recreational and commercial uses.

## **The Land Emerges:**

The present-day national park and preserve encompasses an extensive and diverse north Pacific coastal biome. Steep, sculpted peaks and scoured, rock-strewn valleys exemplify glacial activity and mark advances and retreats that have occurred since before the Wisconsin Ice Age (approx. 100,000 to 10,000 years ago.) High montane ice fields, expansive river and stream systems and a dozen tidewater glaciers influence the terrestrial and marine environments. The sheltered waters of Glacier Bay ebb and flow with the region's huge tides, while ocean waves pound the beaches of the wild and remote outer coast.

Between the bay and the coast, the lofty, snow-clad peaks of the Fairweather Range spawn the park's largest glaciers. From the mountains that surround the bay, one descends into newly deglaciated foothills and outwash plains, which are rapidly turning green as plants re-colonize the rock and soils on the heels of the retreating ice age. A mature spruce and hemlock forest blankets the shoreline and creeps up the slopes of the lower bay. As the glaciers melted, the earth's crust, no longer burdened by the heavy ice, began to rise or "rebound." New islands emerge from the water and beaches continue to rise and expand.

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## **Ecological Importance:**

The park features include mountains over 15,000 feet high, beaches with protected coves, deep fjords, tidewater glaciers (*glaciers that flow down to the sea*), coastal forests, meadows, estuaries (*mixed salt and fresh waters*), lakes and rivers. These natural resources provide ideal habitats for animals. Land and marine mammals, birds and intertidal life all depend on the park's healthy ecosystems for survival. Glacier Bay is an ideal laboratory to study and observe these natural resources.



**Harbor seal on iceberg**

The park contains five major land ecosystems: boggy meadows, coastal western hemlock/Sitka spruce rain forest, alpine tundra, glaciers and icefields, and meadow/brush thickets. It also encompasses three main marine ecosystems: the continental shelf, wave-beaten coasts and fjords/estuaries.

## **Plants and Animals:**

About 420 species of plants can be found in the park. Some of the most common ones include horsetail, fireweed, blueberry, alder and willow. Trees found in the park include cottonwood, Sitka spruce, lodgepole pine, western and mountain hemlock.

In the summer breeding season, 230 birds call Glacier Bay home. Land birds include the rufous hummingbird, ruby-crowned kinglet, hermit thrush, chestnut-backed chickadee, blue grouse and hairy woodpecker. Seabirds and shorebirds include the black-legged kittiwake, tufted puffin, pelagic cormorant, pigeon guillemot, arctic tern and the black oystercatcher. Numerous bald eagles build their nests in spruce and cottonwood trees. Where trees are not available eagles build nests on the ground or on a cliff ledge. Some nests can reach seven feet across.

Over 40 land and marine mammals live in the park. Moose, black and brown bear, porcupine and mountain goats are some of the more common land species. The humpback whale, killer whale, harbor seal, Steller sea lion and sea otter are frequently seen in the bay's waters.

## **Endangered Species:**

An *endangered* species is any plant or animal in danger of extinction throughout all or a significant portion of its range. A *threatened* species is one that is likely to become an endangered species in the near future throughout all or a significant portion of its range. The goal of the Federal Endangered Species Act of 1973 is to restore all federally listed endangered and threatened species to the point where they are again viable, self-sustaining members of their ecological communities.

Species designated endangered or threatened in Glacier Bay include the humpback whale (*endangered*), the Steller sea lion (*threatened*), the peregrine falcon (*species of concern*), Kittlitz' murrelet (*species of concern*) and the spectacled eider (*threatened*). Some wildlife, such as the marbled murrelet, endangered outside of Alaska, and the bald eagle are found in strong numbers in Glacier Bay National Park and Preserve. The Park Service is dedicated to protecting and restoring habitat for all wildlife and restoring species to healthy population levels.

## **Protecting & Managing the Park:**



The park is managed by people who care about the natural, cultural and historical resources found in Glacier Bay. Park managers and rangers also want every visitor to have a safe and enjoyable visit. Certain laws protect the birds, animals, and scenery of the park. For instance, no hiking or camping is allowed in some areas in order to protect bird nesting sites. Rangers provide campers with important information on how and where to camp, bear safety and leaving the land undisturbed after a visit.

In 1992, the park received greater protection on its northern boundary when Canada formed the Asek-Tatshenshini Park. This new Canadian park together with Kluane National Park joined the U.S. parks of Glacier Bay National Park and Preserve and Wrangell-St. Elias National Park to create one of the largest internationally protected areas in the world. It is the mission of the National Park Service to protect and preserve Glacier Bay's beautiful scenery and abundant wildlife for future generations to enjoy.

For more in-depth information visit the park web site at [www.nps.gov/glba](http://www.nps.gov/glba) or [www.alaska.usgs.gov](http://www.alaska.usgs.gov).



## 2017 Fact Sheet

*Arctic Terns raise their young at Glacier Bay before flying to Antarctica in the longest migration of any bird species*



### Superintendent

Philip N. Hooge

### Established

Feb 26, 1925      Designated National Monument  
Dec 2, 1980      Designated National Park & Preserve  
1986              Designated World Biosphere Reserve  
1992              Designated World Heritage site

Glacier Bay represents the most dramatic documented large-scale glacial retreat in the world and provides unparalleled opportunities for scientific study of tidewater glaciers and ecosystem development.

### Size

National Park	3,283,000 acres	5,130 square miles
National Preserve:	57,000 acres	90 square miles

3,283,000 acres      *(roughly the size of the state of Connecticut)*

Park Wilderness:      2,658,000 acres  
World Heritage Site:      24,300,000 acres

*also includes Wrangell-St. Elias National Park, Klauane National Park (Canada) and Tatshenshini-Alesek Park (Canada). One of the world's largest protected wilderness areas.*

### Base Budget

\$ 4,969,434

### Staffing

Permanent              55  
Term/Seasonal          73  
Volunteers              59 *(contributed 2,202 hours of work in '16)*

### Access

Most visitors arrive on cruise ships and tour boats. The only road is 10 miles from the tiny town of Gustavus. Gustavus has an airport and is served by AK Airlines in summer and small planes all year round. The Alaska Marine Highway provides scheduled ferry service from Juneau to Gustavus.

### Visitation

The number of vessels per day is limited in the summer months. Maximum number of vessels allowed each day include 2 cruise ships, 3 tour boats, 6 charter vessels, and 25 private vessels.

2016:      485,415 Cruise ship passengers  
            16,230 Tour boat passengers  
            ~30,000 Land Visitors  
            1002 Backcountry campers

*Humpback whales spend the summer in Glacier Bay and swim to Hawaii for the winter*



### Trails

3 hiking trails: 10 miles  
over 700 miles of shoreline to kayak, camp, and explore.

### Lodging

Glacier Bay Lodge              48 rooms      7,670 guests in 2016  
Bartlett Cove Campground      33 campsites

also: there are a variety of lodges and inns in the nearby community of Gustavus, AK

## Prehistory

Glacier Bay has been the homeland of the Huna Tlingit people for countless generations.

## Climate

Southeast Alaska is within a cool, wet coastal temperate rainforest. Summer: 50° to 60°; Winter 20° to 30°, with extremes of -10° F. Some form of precipitation occurs on average of 228 days per year. Annual precipitation is 70 to 80 inches, including an annual snowfall of 14 feet. High in the Fairweather Mountains, over 100 feet of snow may fall year-round...making it one of the world's snowiest places.

## Marine waters & coastlines

Total Marine Waters: 607,099 acres (largest marine area managed by NPS)  
Coastline (including the outside coast) 1180 statute miles  
Coastline of Glacier Bay proper, excluding all islands: 563 statute miles  
Coastline of Glacier Bay proper, including all islands: 760 statute miles

## Oceans & Tides

Deepest Point in Glacier Bay: 1,410 feet below sea level  
Tides are diurnal: they change every 6 hours (*2 high/2 low every 24 hours*)  
Tidal fluctuation: ranges from -5 feet to 18 feet (*an extreme tide can change 23 feet in 6 hours*)

## Glaciers

250 years ago a single, large tidewater glacier covered all of Glacier Bay. By 1750 the glacier began to retreat and has now retreated 60 miles to the head of the bay.

Currently glaciers cover 2,055 square miles or 27% of the Park. At last count there were 1,045 glaciers in the Park. There are over 50 named glaciers, 7 of which are active tidewater glaciers that calve icebergs into the sea. Most park glaciers originate between elevations from 8,000 to 15,000 feet.

The Grand Pacific, Brady and Carroll Glaciers have areas in excess of 200 square miles.

In general, tidewater and terrestrial glaciers in the Park have been thinning and receding over the last several decades. Exceptions include the Johns Hopkins and Margerie Glaciers.

Selected Glacier Statistics	Height above/below water	Width	Length	Flow rate	Status
Grand Pacific Glacier	60' / 0-60'	2 miles	35 miles	1-4'/day	receding
Johns Hopkins Glacier	250' / 200'	1 miles	12.5 miles	10-15'/day	stable
Margerie Glacier	250' / 100'	1 miles	21 miles	6-8'/day	stable
Lamplugh Glacier	180' / 10-40'	.75 miles	16 miles	2-3'/day	Stable/thinning

## Landmarks & Elevations

Mt. Fairweather	15,325' above sea level	Mount Watson	12,516
Mt Quincy Adams	13,615	La Perouse	10,728
Mount Root	12,860	Mount Bertha	10,204
Mount Crillon	12,726		

## Earthquakes

5 major earthquakes in the last 150 years (date/richter scale reading):  
1853 / ?, 1874 / ?, 1899 / 8.6, 1900 / 7.9, 1936 / , 1958 / 7.9

## Wildlife

Fish	160 marine and estuarine species
Birds	274 species
Mammals	41 species
Amphibians	3 species
Reptiles	none



## Flora

Vascular Plants -333 individual taxa documented

*Brown Bears are often seen along the shorelines and salmon streams of Glacier Bay*