

GLACIER

BAY

NATIONAL
MONUMENT

Alaska



Glacier Bay

NATIONAL MONUMENT



Glacier Bay is a wilderness of snow-clad peaks and branching tidal inlets. It contains one of the world's most spectacular displays of glaciers, extraordinary scenery, and abundant wildlife

On the scenic coast of southeastern Alaska, about 100 miles northwest by boat from Juneau, is Glacier Bay National Monument, established on February 26, 1925. It contains nearly 3,600 square miles and extends about 90 miles at its widest point and some 70 miles north to south. The bay itself is about 50 miles long. It is fed by glaciers that descend from towering mountains clothed in perpetual snow.

THE GLACIERS

The monument contains over 20 tremendous glaciers and many others almost equally impressive. They illustrate all stages, from actively moving ice masses to those that are nearly stagnant and slowly dying. The famous Muir Glacier, one of the most active on the Alaska coast, has a sheer face rising some 265 feet above the water, and is nearly 2 miles wide. Most of the eight fiordlike inlets of the bay terminate at one or more similar ice cliffs.

These glaciers are rivers of ice, hundreds, sometimes thousands of feet deep, which flow slowly down the mountain valleys because of the great weight of the snow and ice constantly accumulating at their sources, high in the mountains. Along the southeast coast of

Alaska, drenched by a continuous succession of westward-moving storms born in the Aleutian region, such glaciers are fed so constantly that many of them flow all the way to the ocean. There, they end in towering cliffs. Great chunks continually crack off as the cliffs become undermined by the water.

When blocks of the ice cliffs, some of which are over 250 feet high, crash into the sea they cause immense waves and sometimes fill the tidal inlets with thousands of drifting bergs and smaller ice fragments. The principal active glaciers are the Muir, Johns Hopkins, Lamplugh, Reid, and Margerie in Glacier Bay and the Lituya and Crillon Glaciers in Lituya Bay.

GLACIER RECESSION AND CLIMATE CHANGES

Even the most rapidly replenished glacial rivers flow extremely slow compared with water. A daily travel rate of an inch or two is common, a foot or two is comparatively fast, and 20 or 30 feet a day, as in the case of Muir Glacier, is rare. If the lowland air is sufficiently warm and accumulation of snow is sufficiently slow, the glacier melts away at

The National Park System, of which this area is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people.

Cover: *Air view of Tarr Inlet and the Grand Pacific Glacier.*

BRADFORD WASHBURN PHOTO.

its snout (lower end) before advance to the ocean is possible. Then deposits, in ridges called moraines, are made at the snout. These deposits consist of vast accumulations of boulders and gravel riding down from higher levels on the surface of the glacier or frozen within it. The Hugh Miller, Cushing, Adams, and Rendu Glaciers are of this type, and therefore no longer reach the sea.

The exact location of the lower end of a glacier represents a fine balance between the opposing forces of replenishment high on the mountain and of melting in the lowlands. An increase in snowfall will eventually cause an advance of the glacier's snout. If the summer season is cool, an advance is immediate. Should these conditions be reversed, the glacier will shorten and its thickness will decrease. For this reason the advance and retreat of glaciers are sensitive indicators of great importance to studies of long-range climatic changes.

Under observation since 1890, the large periodic fluctuations of glaciers in Glacier Bay National Monument have attracted worldwide attention. Ancient, weathered tree

stumps, uncovered by retreating glaciers on the west shore of Whidbey Passage and at other points as far north as Muir and Tidal Inlets, show that the climatic pendulum has swung in a ponderous rhythm of centuries.

With each recession, the barren rock-strewn ground was first reinvaded by fungi, lichens, and mosses. These helped make soil for the horsetails, fireweed, alpine flowers, dwarf willow thickets, and clumps of cottonwoods and alders that came later. Then, when the soil had been fertilized by many years of plant growth and decay, spruce and hemlock forests gradually clothed the land with a mantle of giant trees.

When the climatic pendulum reversed its swing, the reservoirs of ice among the lofty crests again brimmed full. Floods brought down sand and gravel, which killed the trees and covered over the stumps. Once more the glaciers began to grow and grind their way down the valleys. In a few decades nothing of the forest remained but the buried stumps, locked in the gravel beneath hundreds of feet of solid ice until still another swing of the climatic pendulum centuries later. Then a few

Upper Reid Inlet.

ANSEL ADAMS PHOTO.

Margerie



trunks were disinterred by swift streams issuing from under the retreating glaciers, or were exposed by the washing of the salt tides.

About 1700, Glacier Bay was completely covered with an icecap some 3,000 feet thick that extended as far south as the Beardslee Islands. Shortly thereafter the ice commenced a slow retreat, apparently brought about by decreasing snowfall and slightly greater low-land temperatures. However, as late as 1892 the ice still covered most of Muir and Reid Inlets, and Tarr Inlet was invisible and unnamed.

In 1899, an earthquake greatly speeded up the downhill ice flows, probably by a titanic joggling action, and upset the established equilibrium. The bay quickly became choked with floating ice masses that put an end to the steamship excursions which for several years had brought thousands of sightseers close to the glacier faces. Recession following this quake was particularly rapid until about 1907 when its effects seem to have largely died out, although floating ice remained more abundant than before the event occurred.

Between 1899 and 1913, Muir Glacier re-

ceded 8 miles. By 1921, Tarr Inlet had emerged, but Muir and Reid Inlets still were decidedly shorter than at present. Between 1913 and 1946, Muir Glacier receded an additional 5 miles, leaving John Muir's cabin, originally close to the terminus, more than 13 miles away. If the present trend continues, great changes, of highest scientific interest, will occur in the configuration of the upper bay within the next 50 years, eventually to be reflected in the forests, wildlife, and the entire aspect of the area. Changes equally spectacular and profound will occur if the glaciers again advance, which also appears possible.

FORESTS AND WILDLIFE

The southeast end of the monument, toward the mouth of Glacier Bay, is clothed in moss-draped spruce and hemlock. A visitor by boat or plane, with an opportunity to go ashore, can push through the low, dense alder thickets beyond the beach and step immediately into a luxuriant primeval forest, his feet sinking soundlessly into the deep moss where perhaps no white man has walked before.

Glacier ice cliffs from a safe distance of a half mile.

North Crillon

ANSEL ADAMS PHOTO.



Alaska brown bears, grizzlies, black bears, and possibly the rare bluish color phase, called the Glacier Bear, inhabit these forests as do marten, mink, red fox, beaver, wolverine, and Sitka blacktail deer.

Without leaving the boat you may see mountain goats among the lofty crags on Mount Wright or elsewhere, glimpse porpoises and spouting whales in the broad, sheltered stretches of the bay, or surprise hair seals asleep on the floating ice cakes. Large numbers of waterfowl dot the coves and inlets. They include loons, cormorants, geese, king eiders and many other ducks, various gulls and shore birds, murrelets, guillemots and puffins. Ravens, ptarmigan, and hummingbirds inhabit the shorelands.

Spawning salmon crowd the rushing streams in the spring, attracting many bears, particularly in Bear Track Cove where they have worn broad, winding trails along the stream banks.

THE MOUNTAINS

Glacier Bay lies between two parallel mountain ranges loftier than any in the

n Glacier, Lituya Bay.

BRADFORD WASHBURN PHOTO.



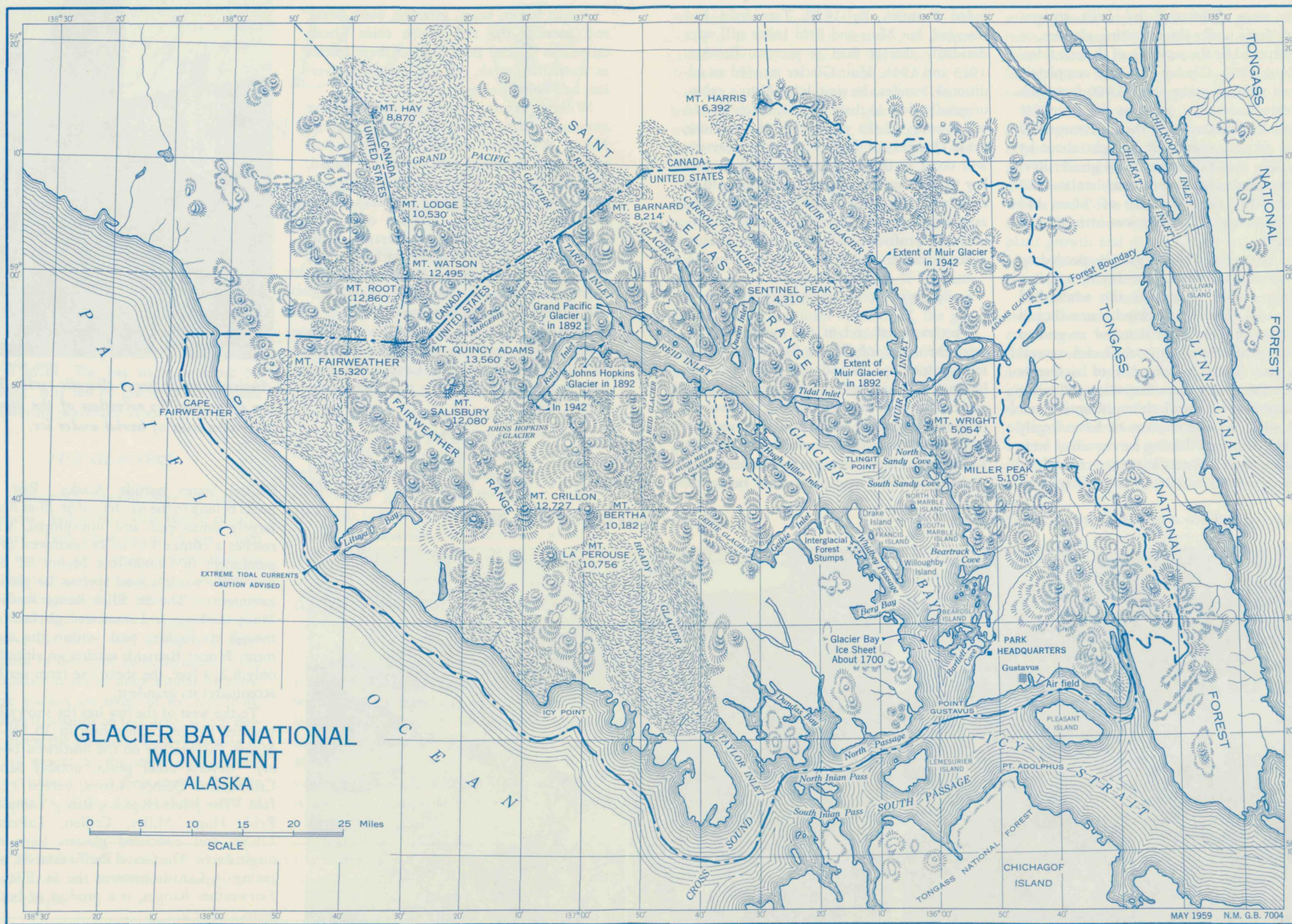
ANSEL ADAMS PHOTO.

Ancient stumps prove climatic cycles. They are uncovered by recession of the glaciers after centuries of burial under ice.

United States outside Alaska. East side peaks belong to the ice-draped St. Elias Range, largely unmapped and unexplored, which reaches a climax 140 miles northwest of the monument in 18,000-foot Mount St. Elias, one of the world's most spectacular glaciated mountains. The St. Elias Range feeds the Muir, Cushing, and associated glaciers. Although its highest peak within the monument, Mount Barnard, reaches an altitude of only 8,214 feet, the sheer rise from sea level accentuates its grandeur.

To the west of the bay lies the snowy Fairweather Range, culminating in 15,320-foot Mount Fairweather on the northwest boundary. Several other peaks, notably Mounts Crillon and Quincy Adams, exceed 12,000 feet. The Johns Hopkins, Brady, Lamplugh, Reid, Hugh Miller, Crillon, LaPerouse, Lituya, and associated glaciers have their origin here. The Grand Pacific Glacier, originating in Canada between the St. Elias and Fairweather Ranges, is a product of both of them.





ISLANDS AND OTHER BAYS

Glacier Bay is studded with islands, some, like the Beardslee archipelago in the south, being low and densely wooded, while others, like the Marble Islands, are steep and largely treeless, and are used as nesting rookeries by thousands of sea birds. The Beardslee Islands and a few others are composed of sand derived from the valleys opposite which they are located. However, the majority are of solid rock, much worn and scarred by the passage of former glaciers.

Opening into Cross Sound, southwest of Glacier Bay, lies beautiful, winding Dundas Bay with heavily wooded shores. From its upper end, nearby Taylor Bay can be reached by a short overland hike. Westward from these the monument extends to the open, gale-lashed North Pacific Ocean. Here, 26 air miles northwest of Icy Point, lies the deep pocket of scenic Lituya Bay, made difficult of access by violent tidal currents that four times each day sweep through its narrow entrance.

GENERAL INFORMATION

Visitors may obtain assistance and information from the park ranger at Bartlett Cove.

At present, there are no public accommodations within the monument. Several American companies, as well as the Canadian Pacific Company, offer tourist cruises into the bay. Travel information is available through the Alaska Visitor's Association, Juneau, Alaska, and through travel agencies.

Flying time from Juneau to the monument is about 30 minutes, one way, via Alaska Coastal Airlines or chartered plane. A small boat requires about a day to make the same trip. At least $3\frac{1}{2}$ days should be allowed for such a boat trip.

Marine navigation should not be undertaken without charts of Glacier Bay. Some of the best anchorages are North and South Sandy Coves, Hugh Miller Inlet, Berg Bay, and at monument headquarters at Bartlett Cove where a pier and small boat dock are maintained.

Floating ice sometimes occurs in enormous quantities at the foot of the glaciers in the

upper end of the bay. When falling from the faces of glaciers, it may create waves 30 feet high. Therefore, small boats should not approach closer than half a mile to active glaciers. Icebergs also should not be approached closely because, if disturbed by swells from a small boat in passing, they may roll over.

Shoals and kelp beds are present; daily tides average between 18 and 20 feet; and surveys beyond a line running north from Francis Island to Tlingit Point (western entrance point of Muir Inlet) are incomplete. For these reasons and because of the frequency of Alaska coastal storms, navigation of the bay by small boats is not considered safe without local knowledge. The approach to Dundas Bay should not be attempted by small boats in unfavorable weather because of the frequent occurrence of rough water in Cross Sound. Lituya Bay and the waters of the open coast north of Icy Point should be avoided by small craft at all times.

ADMINISTRATION

Glacier Bay National Monument is administered by the National Park Service of the U.S. Department of the Interior, and is under the immediate supervision of the Superintendent, Sitka and Glacier Bay National Monuments, Box 1781, Juneau, Alaska.

MISSION 66

Mission 66 is a program designed to be completed by 1966 which will assure the maximum protection of the scenic, scientific, wilderness, and historic resources of the National Park System in such ways and by such means as will make them available for the use and enjoyment of present and future generations.

U.S. DEPARTMENT OF THE INTERIOR

Fred A. Seaton, *Secretary*

NATIONAL PARK SERVICE

Conrad L. Wirth, *Director*



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