

Acadia East and West

Bar Harbor, Mount Desert, Southwest Harbor, Tremont

Site Description

Lying just east of Penobscot Bay, Mount Desert Island is an ecologically prominent feature of the Maine coast. It encompasses roughly 60,000 acres, about half of which is within Acadia National Park. The maritime climate is cool and humid, and fog is frequent, and often lingering, along the coast. Mount Desert Island has an almost 300-year history of settlement, including extensive land-clearing, and the peninsulas and other islands in Penobscot Bay have been likewise settled or at least used for pasture and/or timber for centuries.



Cadillac Mountain, Acadia National Park

Ecologically, Mount Desert Island is at the transition from the southwestern portions of our coastline, which share many characteristics with the Atlantic coast south of Maine, to the Down East coast, which shares more characteristics with the Canadian Maritimes. The overlap of features from both ecological regions is unique along Maine's coast. "Southern" features include pitch pine woodlands reminiscent of areas in the Mid-Coast region. The more boreal features include headlands with roseroot (*Rhodalia rosea*) and beach-head iris (*Iris setosa*), or rocky woodlands with patchy black spruce and heaths. Much of the region is characterized by spruce-fir forests in various stages of post-disturbance succession.

Mount Desert Island's prominence derives not only from its biogeographic placement, but also from the exceptional combination of physical features that make up the island. The landforms of Acadia are among its best-known features, and gave origin to the name Mount Desert Island (roughly, "Isle of the Barren Hills"). Glacial and post-glacial activity has left a series of north-south trending ridges separated by deep U-shaped valleys. The ridges are rounded along their crests, and extensive windswept areas are treeless, standing out sharply above the predominant forest cover of the lower slopes. Cadillac Mountain is the best known; other prominent hilltops are Pemetic, Parkman, and Penobscot Mountains on the eastern half of the island; and Western, Acadia, and St. Sauveur Mountains on the western side. These dramatic ridges are juxtaposed against the rocky coastline, with a diversity of wetlands in the low-lying areas in between. Somes Sound, which bisects the island, is the only true fjord on the east coast

of the U.S. The upland soils are mostly thin and granitic, with many areas of bedrock or talus where soil development is minimal at best. Wetlands are underlain by marine deposits or poorly drained tills, and include both mineral soil and organic soil wetlands.

Fire is an important factor in Acadia's natural history. The famed 1947 fire that burned most of the eastern side of Mount Desert Island is the most recent extensive fire, but evidence of past burns is present in trees and soils throughout the Park. Post-fire aspen-birch communities are still abundant. The spruce-fir forests, the dominant closed-canopy forest type on the island, include a large component of earlier-successional birch and red maple within the area that burned, along with the maturing spruce and fir. Vegetation on the western half of the island, which escaped the 1947 fire, reflects more clearly the underlying edaphic characteristics rather than the effects of recent fire.

Eastern Mountains

The ridges on the eastern half of the island include the most prominent of Acadia's mountains. These feature expansive open ridges where harsh conditions limit tree growth, and trees are either very sparse or occur as stunted woodlands. Cadillac Mountain has the most varied vegetation as well as the greatest concentration of rare plants.



Pitch Pine Woodland, Acadia National Park

The open areas running from the summit of Cadillac south along its ridge include areas of low-elevation summit bald, subalpine heath – krummholz, pitch pine woodland, and jack pine woodland. The slopes of Cadillac display the full altitudinal range of post-fire aspen-birch woodland/forest complex vegetation, ranging from forests to woodlands to scrubby shrublands on the upper slopes. Rare plants on Cadillac include Appalachian fir-clubmoss (*Huperzia selago*), alpine blueberry (*Vaccinium boreale*) at its only low-elevation site in Maine, and smooth sandwort (*Minuartia glabra*).

Nearby mountain ridges—Champlain, Dorr, Pemetic, Penobscot, Sargent, and Norumbega—have similar pitch pine woodland and subalpine heath – krummholz vegetation, with some smaller areas of low-elevation summit balds. The side slopes of The Bubbles have good examples of birch – oak talus woodlands, which are different in both tree and herb flora from the more common spruce talus woodlands. Together, Cadillac and the other eastern mountains form an extensive network of these uncommon community types.

Western Mountains

The mountains on the western side of Mount Desert Island tend to be more fully vegetated, in part because they escaped the 1947 fire, but also because most are somewhat lower than the eastern mountains. Western Mountain and Bernard Mountain have good examples of spruce – fir – broom-moss forests, including some areas of old-growth. The pitch pine woodlands that are so characteristic of Acadia and Mount Desert Island occur on the western mountains as

well—e.g. Acadia Mountain and St. Sauveur, including an interesting variation with pitch pine and scrub oak (*Quercus ilicifolia*) on Acadia Mountain. Along the St. Sauveur trail one can also find a good example of a red pine – white pine forest.

Near-Coastal Low Hills

The lower hills near the coast show the conifer woodlands in a slightly different expression. On Mount Desert Island, good examples of pitch pine woodlands are seen on many of the low hills near the coast, including Kebo Mountain, the area northwest of Thunder Hole, and along the Beachcroft Trail.

Rocky woodlands dominated by northern white cedar (*Thuja occidentalis*) can also be found on some of the lower hills (rarely on the mid-to-upper slopes) on Mount Desert Island. These white cedar woodlands have not been documented anywhere else in the state; if they occur elsewhere, it would almost certainly be along the coast. Two variants have been seen on Mount Desert Island: a fairly dry and acidic expression with cedar and heath shrubs, and a more mesic setting with white cedar and ash over thin seepy soils.

Wetlands

The forested and open wetlands of Mount Desert Island encompass a wide variety of habitat types. Big Heath, in Southwest Harbor, is an example of a coastal plateau bog ecosystem at the extreme southwestern limit for the type. This kind of peatland is typical of further Down East Maine and the Canadian Maritimes, featuring large amounts of black crowberry (*Empetrum nigrum*) along with lawn-like patches of deer-hair sedge (*Trichophorum cespitosum*) and occasional baked-apple berry (*Rubus chamaemorus*). Bass Harbor Marsh is an exemplary streamshore ecosystem that shows an interesting gradation from mixed graminoid-forb saltmarsh to brackish tidal marsh, all the way to freshwater conditions (mixed graminoid - shrub marsh) as one moves upstream. Fresh Meadow, near the north end of Mount Desert Island, is an interesting tidally influenced level bog ecosystem, with both raised bog portions and tidal creeks. Great Meadow in Bar Harbor contains good examples of red maple alluvial swamp (-red maple – sensitive fern swamp), and mixed graminoid – shrub marsh. Unusual forested wetlands on Mount Desert Island include two small areas of hardwood seepage forests, dominated by ash and/or yellow birch rather than by the more typical red maple and spruce.

Shores

The rocky coastline of Downeast Maine attracts many visitors who come for the views, sounds, and salt air. The shores of Mount Desert Island also feature unusual natural communities and several rare plants, not to mention their importance as habitat for birds and other animals. Open headland vegetation can be found in small pockets wherever bedrock forms headlands along the shore. Sand Beach, while not a particularly large sandy beach, is noteworthy as a beach with a dune grassland because sandy beaches rarely occur this far downeast. The shoreline from Sand Beach to Otter Cover provides winter habitat for purple sandpipers.

Wildlife

Mt. Desert Island fosters some excellent habitat for a variety of rare and uncommon bird species. Peregrine falcons nest at several locations on Mt. Desert Island. Least bitterns have been observed nesting in Two Moose Pond adjacent to Bass Harbor Marsh. Nelson's sharp-tailed sparrows—an uncommon species in Maine—also are regular breeders at Bass Harbor Marsh and other smaller salt marshes around the periphery of the island. And Northeast Creek hosts breeding pairs of sedge wrens and Nelson's sharp-tailed sparrows.

Rare Species and Exemplary Natural Community Table for Mt. Desert Island

Common Name	Latin Name	S-RANK	G-RANK	State Status
<i>Exemplary Natural Communities</i>				
Coastal Plateau Bog Ecosystem		S3	N/A	N/A
Raised Level Bog Ecosystem		S4	N/A	N/A
Low Elevation Bald		S3	N/A	N/A
Maritime Spruce-Fir Forest		S4	N/A	N/A
Pitch Pine Woodland		S3	N/A	N/A
Red Pine Woodland		S3	N/A	N/A
Spruce-Pine Woodland		S4	N/A	N/A
Spruce - Northern Hardwoods Forest		S4	N/A	N/A
Streamshore Ecosystem		S4	N/A	N/A
White Cedar Woodland		S2	N/A	N/A
Jack Pine Woodland (historic)		S3	N/A	N/A
<i>Rare Plants</i>				
Nantucket shadbush	<i>Amelanchier nantucketensis</i>	S2	G3Q	T
New England northern reed grass	<i>Calamagrostis stricta</i> spp. <i>Inexpansa</i>	S1	G5T5	E
Wiegand sedge	<i>Carex wiegandii</i>	S3	G3	SC
Appalachian fir-clubmoss	<i>Huperzia appalachiana</i>	S2	G4G5	SC
Prototype quillwort	<i>Isoetes prototypus</i>	S1	G2?	T
Smooth sandwort	<i>Minuartia glabra</i>	S2	G4	SC
Mountain sandwort	<i>Minuartia groenlandica</i>	S3	G5	SC
Alga-like pondweed	<i>Potamogeton confervoides</i>	S3	G3G4	SC
Comb-leaved mermaid-weed	<i>Prosperpinaca pectinata</i>	SH	G5	SC
Water awlwort	<i>Subularia aquatica</i>	S2	G5	SC
Alpine blueberry	<i>Vaccinium boreale</i>	S1S2	G4	T
Horned pondweed	<i>Zannichellia palustris</i>	S2	G5	SC
Alpine clubmoss (exact location not known)	<i>Huperzia selago</i>	S1	G5	T
Acadian quillwort (exact location not known)	<i>Isoetes acadensis</i>	S1	G3?	T
American sea-blite (historic)	<i>Suaeda calceoliformis</i>	S1	G5	T
Dwarf rattlesnake root (historic)	<i>Prenanthes nana</i>	S1	G5	E
Auricled twayblade (historic)	<i>Listera auriculata</i>	S1	G3	T
Long's bitter-cress (historic)	<i>Cardamine longii</i>	S2	G3Q	T
Swarthy sedge (historic)	<i>Carex adusta</i>	S1	G5	E
Sweet pepperbush (historic)	<i>Clethra alnifolia</i>	S2	G5	SC
Showy lady's slipper (historic)	<i>Cypripedium reginae</i>	S2S3	G4	T
Small purple bladderwort (historic)	<i>Utricularia resupinata</i>	S1	G4	E
Mountain laurel (historic)	<i>Kalmia latifolia</i>	S2	G5	SC
Canada mountain ricegrass (historic)	<i>Oryzopsis canadensis</i>	S1?	G5	SC

<i>Rare Animals</i>				
Peregrine falcon	<i>Falco peregrinus</i>	S2B	G4	E
Least bittern	<i>Ixobrychus exilis</i>	S2B	G5	SC
Sedge wren (exact location not available)	<i>Cistothorus platensis</i>	S1B	G5	E
Ebony boghaunter (historic)	<i>Williamsonia fletcheri</i>	S3?	G3	SC

Other Habitats Mapped by MDIF&W

Tidal Waterfowl / Wading Bird Habitat

Freshwater Waterfowl / Wading Bird Habitat

Conservation Considerations

- The greatest threat to most rare or exemplary natural features on Mount Desert Island is recreational over-use from the extremely heavy tourist and recreational pressure. While the Park does its best to manage the recreational impacts, degradation of some habitats is inevitable. Tourist use of non-park holdings focuses on the developed towns on the island; almost all of the tourist and recreational effects on natural features falls within the Park. With three million visitors per year, Acadia is one of the most heavily visited national parks. Managing recreational impacts to important natural features is a continuing and high-priority endeavor for park staff.
- Some wetlands have become susceptible to invasion by purple loosestrife (*Lythrum salicaria*), and some upland habitats are being invaded by other exotic plant species. Control of invasive exotic plants will be important to conservation efforts.
- Residential development pressure, already fairly intensive, will probably continue and may affect some features on private lands.
- Over the long term, global warming may further endanger the boreal/maritime habitats and plant species associated with coastal bogs, saltmarshes, and headlands.

Current Protection Status

Roughly half of Mount Desert Island, some 30,000 acres, is contained within Acadia National Park. The Park holds easements on an additional 11,000 acres. The Nature Conservancy also protects some smaller holdings in the area. Almost all of the features known to be of high conservation priority on Mount Desert Island are protected either in fee or by easement. Exceptions include Fresh Meadow on Mount Desert Island, which is partly in Park Service ownership and partly in private ownership.