USDA Natural Resources
Conservation Service

Ecological site F144BY009ME
Sandy Beach (reserved)

Last updated: 9/27/2024
Accessed: 03/14/2026

General information

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

MLRA notes

Major Land Resource Area (MLRA): 144B–New England and Eastern New York Upland, Northern Part

This major land resource area (MLRA) is in Maine (56 percent), New Hampshire (22 percent), Vermont (14 percent), Massachusetts (6 percent), Connecticut (1 percent), and New York (1 percent). It makes up about 22,728 square miles (58,864 square kilometers). The MLRA consists of a relatively young landscape shaped by the Laurentide Ice Sheet, which covered the region from 35,000 to 10,000 years ago. Rolling hills of dense basal till converge on ridges of shallow bedrock that were scoured by glacial ice. River valleys that were flooded by melting glacial water or seawater house large expanses of glacial outwash and stratified drift in inland areas and, to a lesser extent, glaciomarine and glaciolacustrine sediment deposits in coastal areas. Organic bogs, ablation till, and alluvial flood plains make up the remaining portions of the MLRA.

The soils in this region are dominantly Entisols, Spodosols, and Inceptisols. They commonly have a fragipan. The dominant suborders are Ochrepts, Orthods, Aquepts, Fluvents, and Saprists. The soils in the region dominantly have a frigid soil temperature regime with some cryic areas at higher elevation, a udic soil moisture regime, and mixed mineralogy. Most of the land is forested, and 98 percent is privately owned. Significant amounts of forest products are produced including lumber, pulpwood, Christmas trees, and maple syrup. Principal agricultural crops include forage and grains for dairy cattle, potatoes, apples, and blueberries. Wildlife habitat and recreation are important land uses. Stoniness, steep slopes, and poor drainage limit the use of many of the soils.

Maritime Sandy Beaches are restricted to the Maine coast.

Classification relationships

USDA-NRCS (USDA 2006)
Land Resource Region (LRR): R—Northeastern Forage and Forest Region
Major Land Resource Area (MLRA): 144B—New England and Eastern New York Upland, Northern Part

USDA-FS (Cleland et al. 2007)
Province: 211 - Northeastern Mixed Forest Province (in part – eastern)
Section: 211D - Central Maine Coastal and Embayment
Subsection: 221Da - Central Maine Embayment
Subsection: 211Db - Casco Bay Coast
Subsection: 221Dc - Penobscot Coast

Ecological site concept

Additional research and on-site data collection is needed to further develop interpretations for this ecological site.

Maritime Sandy Beach ecological sites are beach strands occurring just at and above the limits high tide line on sandy beaches. Beaches are flooded daily by the tides and during storms. With accelerated sea-level rise, beaches are expected to migrate landward. Beach strand vegetation is typically sparsely vegetated and more often dominated by forbs than grasses.

Associated sites

F144BY010ME	**Coastal Dune (reserved)** Coastal Dunes often are developed just landward of the Sandy Beaches.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Suaeda maritima* (2) *Lathyrus japonicus var. maritimus*

Physiographic features

Maritime Sandy Beaches are depositional features of the coast where the land meets the sea.

Table 2. Representative physiographic features

Landforms	(1) Beach

Runoff class	High
Flooding duration	Extremely brief (0.1 to 4 hours)
Flooding frequency	Very frequent
Elevation	0–2 m
Slope	1–3%
Aspect	Aspect is not a significant factor

Climatic features

The climate is humid and temperate and is characterized by warm summers and cold winters. Precipitation generally is evenly distributed throughout the year. Near the coast, it is slightly lower in summer. In inland areas, it is slightly higher in spring and fall. Rainfall occurs during high-intensity, convective thunderstorms in summer. In winter, most of the precipitation occurs as moderate-intensity storms (northeasters) that produce large amounts of rain or snow. Heavy snowfalls commonly occur late in winter. Temperatures and the length of the freeze-free period increase from north to south and closer to the coast.

Table 3. Representative climatic features

Frost-free period (characteristic range)	131-146 days
Freeze-free period (characteristic range)	165-184 days
Precipitation total (characteristic range)	1,168-1,321 mm
Frost-free period (actual range)	128-162 days
Freeze-free period (actual range)	153-192 days
Precipitation total (actual range)	1,143-1,397 mm
Frost-free period (average)	140 days
Freeze-free period (average)	171 days
Precipitation total (average)	1,245 mm

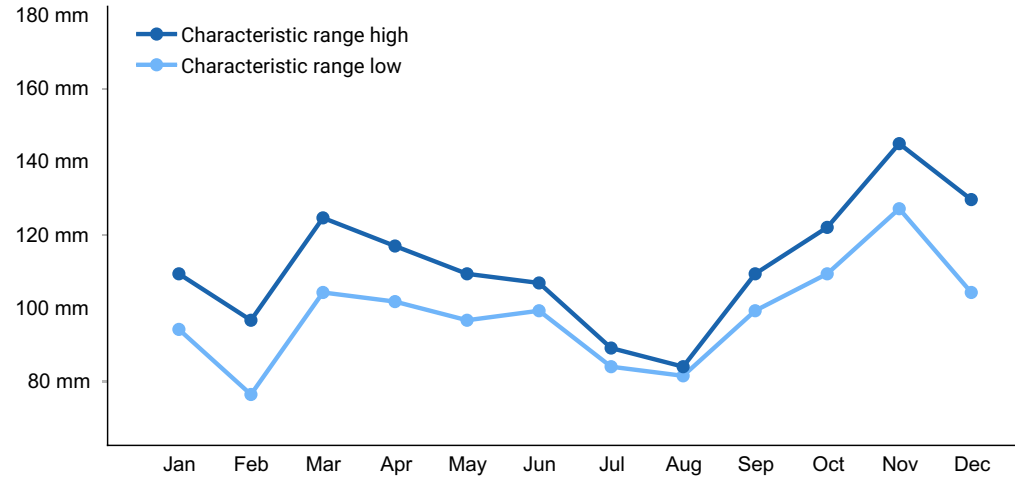


Figure 1. Monthly precipitation range

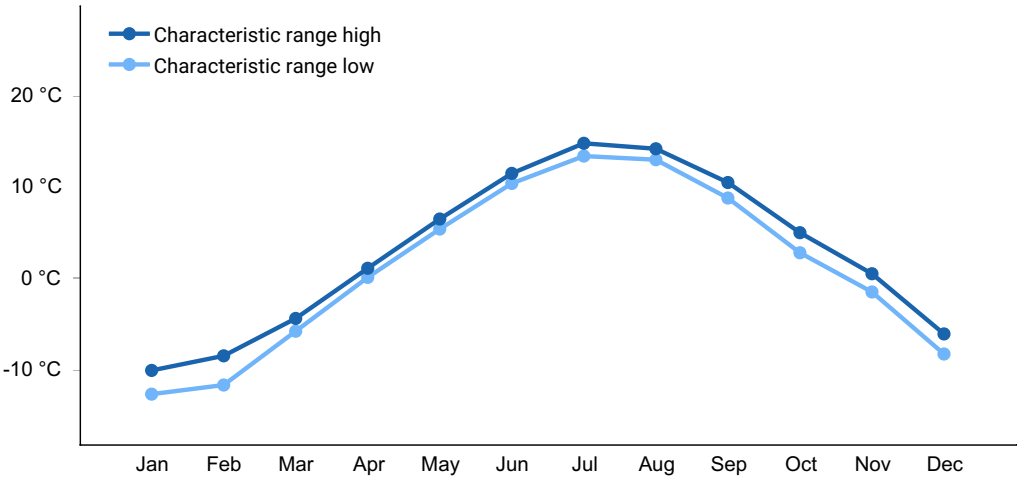


Figure 2. Monthly minimum temperature range

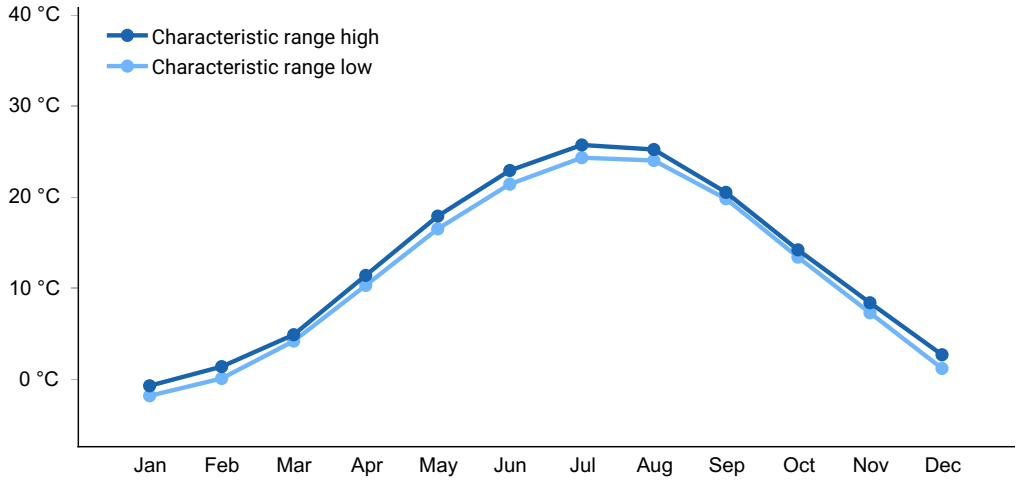


Figure 3. Monthly maximum temperature range

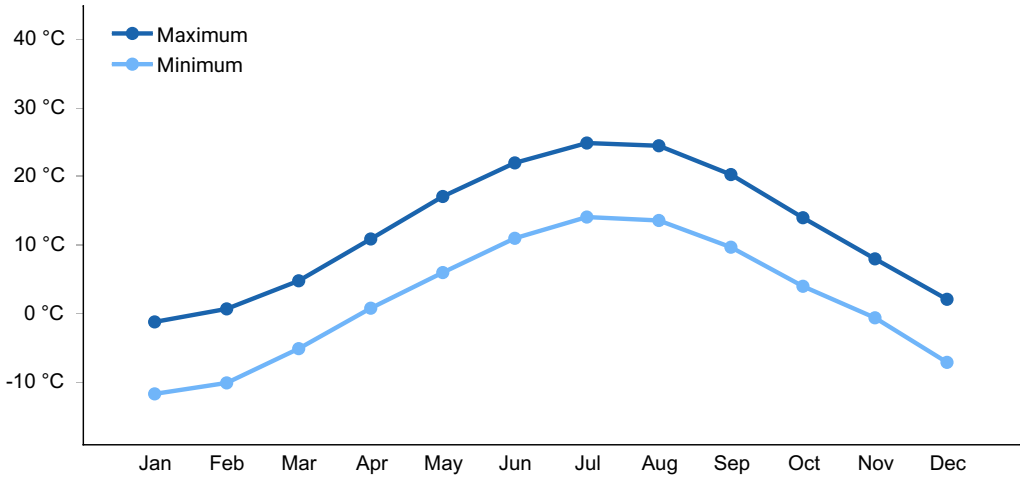


Figure 4. Monthly average minimum and maximum temperature

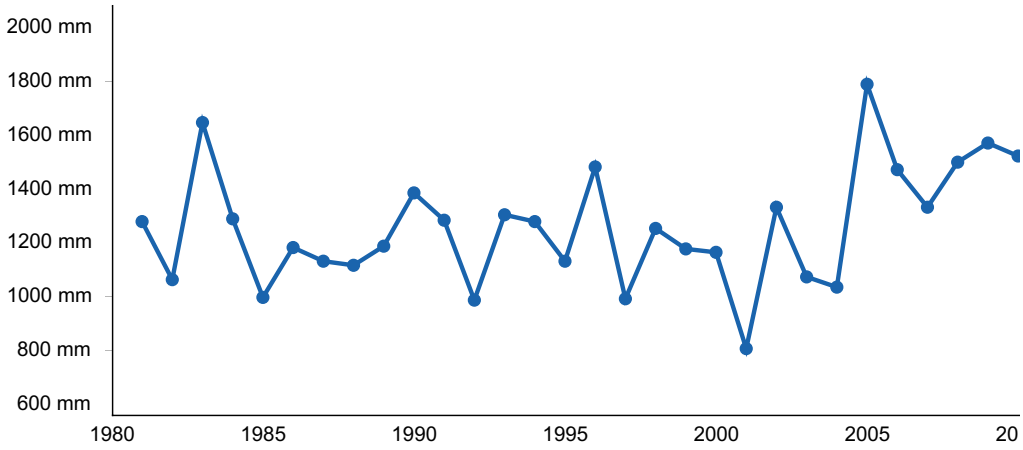


Figure 5. Annual precipitation pattern

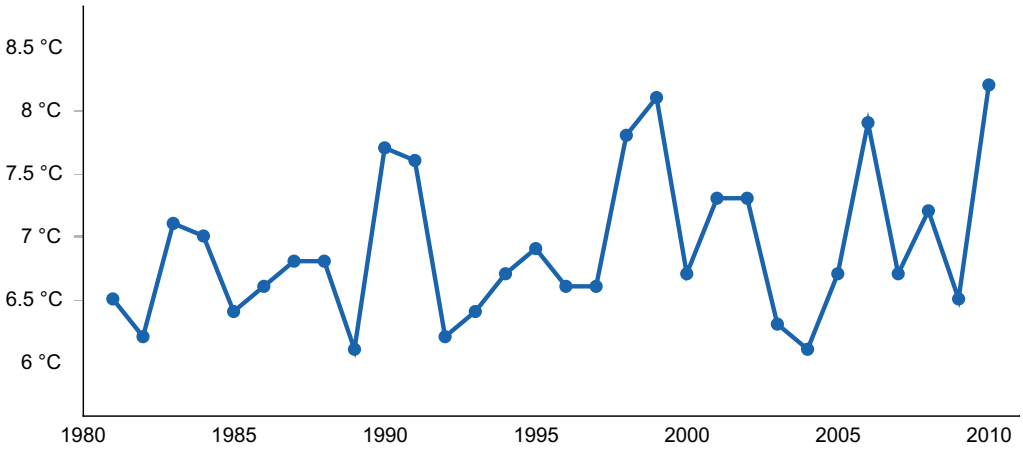


Figure 6. Annual average temperature pattern

Climate stations used

- (1) BELFAST [USC00170480], Belfast, ME
- (2) LINCOLN SAN DIST WTP [USC00174683], Blue Hill, ME
- (3) EASTPORT [USC00172426], Eastport, ME
- (4) ROBBINSTON [USC00177238], Robbinston, ME

- (5) PORT CLYDE [USC00176881], Tenants Harbor, ME
- (6) ELLSWORTH 3SSW [USC00172623], Surry, ME
- (7) ACADIA NP [USC00170100], Bar Harbor, ME
- (8) WEST ROCKPORT 1 NNW [USC00179593], Rockport, ME
- (9) WESTPORT ISLAND [USC00179547], Wiscasset, ME
- (10) WISCASSET AP [USW00094623], Wiscasset, ME

Influencing water features

Beaches are subject to the ebb and flow of oceanic tides.

Wetland description

According to the National Wetlands Inventory, Sandy Beaches are classified as: Marine or Estuarine (system) , intertidal (subsystem), unconsolidated shore (class), and sand (subclass).

Soil features

Typical soil mapunits are beaches and coastalbeaches.

Table 4. Representative soil features

Parent material	(1) Beach sand
Surface texture	(1) Sand

Ecological dynamics

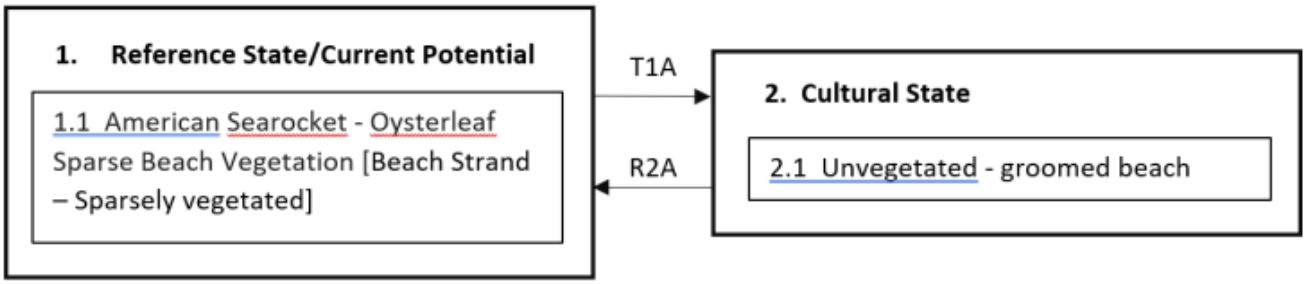
Caveat: The vegetation information contained in this section and is only provisional, based on concepts, and future projects support validation through field work. *] The vegetation groupings described in this section are based on the terrestrial ecological system classification and vegetation associations developed by NatureServe (Comer et al., 2003) and localized associations provided by the New York Natural Heritage Program (Edinger et al., 2014), Maine Natural Areas Program (Gawler and Cutko, 2010), New Hampshire Natural Heritage Program (Sperduto and Nichols, 2011), and Massachusetts Division of Fisheries and Wildlife (Swain, 2020).

The maritime sandy beach ecological site is subject overwash during high tides and storms as well as salt spray, desiccating winds, and sun exposure.

Additional research and on-site data collection is needed to further develop interpretations for this ecological site.

State and transition model

F144BY009ME – Sandy Beach



Transition	*Drivers/practices*
T1A	Beach grooming, trampling
R2A	Eliminate vegetation removal; Vegetation development (succession)

State 1
Reference State (minimally disturbed)

The Maritime Sandy Beach Beach occurs at or above the usual high tide line on sandy beaches, subject to overwash during high tides and storms as well as salt spray, sand abrasion, desiccating winds, and sun exposure. Vegetation may be reduced or eliminated owing to the natural disturbances or beach traffic and trampling at popular beaches.

Characteristics and indicators. The Maritime Sandy Beach is a highly dynamic maritime environment, characterized by a narrow, sparsely vegetated beach strand which can be reduced or eliminated by disturbances.

Dominant plant species

- American searocket (*Cakile edentula*), other herbaceous
- beach pea (*Lathyrus japonicus var. maritimus*), other herbaceous

Dominant resource concerns

- Wind erosion
- Bank erosion from streams, shorelines, or water conveyance channels
- Concentration of salts or other chemicals
- Ponding and flooding
- Sediment transported to surface water
- Plant structure and composition

Community 1.1
American Searocket - Oysterleaf Sparse Beach Vegetation

Cakile edentula ssp. edentula - *Mertensia maritima* Sparse Beach Vegetation

(CEGL006106); Translated Name: American Searocket - Oysterleaf Sparse Beach Vegetation; Common Name: Northern Maritime Beach Strand. Plant species cover and diversity are low. Scattered plants may include *Cakile edentula* (American sea-rocket), Russian thistle/saltwort (*Salsola kali*), herbaceous seepweed (*Suaeda maritima*), sea milkwort (*Glaux maritima*), beach vetchling (*Lathyrus japonicus* var. maritimus), and Seaside sandplant (*Honckenya peploides*). Oysterleaf (*Mertensia maritima*) is considered diagnostic, although not necessarily present. (Source: NatureServe Explorer: accessed 2022; USNVC: accessed 2022).

State 2
Cultural State

The Cultural State is strongly transformed by land use conditioning, and is unvegetated due to trampling by heavy use or beach grooming.

Community 2.1
Unvegetated

Unvegetated due to trampling by heavy use or beach grooming.

Transition T1A
State 1 to 2

Beach grooming, trampllng - especially among the popular beaches.

Restoration pathway R2A
State 2 to 1

elimination of vegetation removal, allow for vegetatation development (succession)

Additional community tables

Inventory data references

Future work is needed, as described in a future project plan, to validate the information presented in this provisional ecological site description. Future work includes field sampling, data collection and analysis by qualified vegetation ecologists and soil scientists. As warranted, annual reviews of the project plan can be conducted by the Ecological Site Technical Team. A final field review, peer review, quality control, and quality assurance reviews of the ESD are necessary to approve a final document.

Other references

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Contributors

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Nels Barrett

Acknowledgments

Nels Barrett and Nick Butler provided considerable review of this ecological site concept.

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	03/14/2026
Approved by	Nels Barrett
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

    Dominant:

    Sub-dominant:

Other:

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**

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17. **Perennial plant reproductive capability:**
