

Natural Resources

Overview

Viewed in the context of its natural habitats and plant and animal species, Kennebunk is very rich. The variety of its special environments – from the barrens to the estuaries, and including marshes, stream corridors, beaches, forested areas, rivers, barrens, shoreland, plants and animals - is part of what makes Kennebunk attractive to residents and visitors alike.

(See FIG.NR1 “Natural Resources Map for Kennebunk” at end of chapter)

Soils

Soils are vital resources that are a part of the natural environment and store water, nutrients, and support for plants. In Kennebunk there are over two dozen different soils, as identified by the Natural Resource Conservation Service (NRCS). Soils are of great importance to a community and are evaluated for properties including texture, permeability, slope, drainage, water table, flooding and depth to bedrock. An overview of the Town of Kennebunk shows that approximately 50-60% of the soils present are non-discharge soils, that is, soils that cannot support subsurface on-site waste disposal. Most soils east of the Turnpike – where sewers are available to most, although not all, parcels - are given a very low rating in terms of their ability to support septic systems. West of the Turnpike, in the Rural Conservation, Rural Residential, and West Kennebunk Village Residential Districts, the largest proportion are given a medium rating per NRCS Soil Potential Ratings.

(See FIG.NR2 “Kennebunk Soil Types” map at end of chapter)

Topography

Kennebunk’s topography consists of mostly level or gently rolling terrain typical of coastal lowlands. Elevations rise gradually from less than 20 feet above sea level near the coast to a few isolated high points at an elevation of 240 feet. Elevation defines the watershed boundaries for the three major rivers of Kennebunk, and the land rises in a general east to west pattern within each watershed. The land east of the Maine Turnpike is mostly between sea level and 100 feet of elevation and the highest elevations occur mostly in the southwest portion of the Town between the Mousam and Branch Brook watersheds. Slopes are described as a percentage and represent the ratio of vertical rise of the land to horizontal distance. Slope is a factor to be considered in determining areas suitable for development, since steeply sloping lands (those exceeding a 15% slope) may be prone to excessive erosion and sloughing if they are disturbed. When these slopes are adjacent to water bodies, erosion can result in sedimentation and have adverse effects on water quality.

Wetlands

Kennebunk has significant freshwater inland wetlands as well as scenic coastal wetlands, both of which help maintain rural vistas and lower the intensity of development by providing open space buffers between developed areas. Wetlands protect and nurture a diversity of wildlife and vegetation adapted for life in saturated soils.

Salt marshes, which have exceptionally high wildlife, fisheries, recreational, aesthetic and educational values, are relatively uncommon in Maine. Kennebunk has two major salt marsh complexes (Mousam River



Mousam River salt marshes

Photo credit: Janice Vance

and Back Creek at Parsons Beach) as well as smaller salt and brackish marshes associated with the Kennebunk River and Lake Brook Creek. These wetlands, which are highly visible, are the "Crown Jewels" of Kennebunk's wetlands. Wetlands within the Branch Brook watershed are highly valuable due to their contribution to the Kennebunk-Kennebunkport-Wells public water supply and to the Little River salt marsh.

Medium and large forested wetlands are important for wildlife and water quality. Forested wetlands east of the Maine Turnpike comprise the majority of available wildlife habitat. These wetlands are primarily used by non water-dependent species such as white tailed deer and songbirds. For forest interior songbirds, large tracts of unbroken forest are essential. As growth pressures increase, these wetlands will become increasingly important as wildlife refuges. Forested wetlands west of the Turnpike, while still supporting a high diversity of species, are less critical as refuges. Forested wetlands also provide important water resource benefits by detaining and cleansing runoff and storm water, discharging water and nutrients to downstream aquatic ecosystems, and seasonally recharging groundwater through coarse, sandy soils. As undeveloped areas, they also provide open space and recreational benefits for hunting, hiking, and nature study. The larger wetlands are less vulnerable to nearby site development but their value may be severely impacted if they are fragmented into smaller blocks by development.

Kennebunk values its wetlands and has among the more stringent regulations in the State regarding wetland filling or alteration. The Town regulates wetlands of one acre or larger and requires sign-offs from Maine DEP for all wetland permits. Wetlands have been assigned Priority 1, Priority 2 and Priority 3 status that categorizes their relative importance as an ecosystem. Setbacks are generally 25 feet for Priority 3, 50 feet for Priority 2 and 100 feet for Priority 1. Standards establish minimum setbacks for buildings and structures, roadways, driveways, parking areas and other impervious surfaces as they relate to the upland edge of the wetland.

It is estimated that 75% of Kennebunk's highest priority wetlands are east of the Maine Turnpike. A mapping source to locate wetlands is available at: <https://www.fws.gov/wetlands/data/mapper.html>

Wildlife and Fisheries Habitat

Kennebunk's Town Hall uses GIS-based maps supplied by *Beginning with Habitat (BwH)* – a collaborative program of federal, state, local and non-governmental organizations dedicated to conserving wildlife and plant habitat – to determine what species may be on all parcels within the Town.

BwH's primary map (Map 2) is "Plant and Animal Habitats" which depicts a hierarchy of habitats and pinpoints the exact location of the incidence of various species as well as their status under State and Federal regulations. The following inventory provides a portion of the information for Kennebunk provided by the *BwH* Map 2:

Threatened or endangered species:

- West of the Turnpike – Grasshopper Sparrow, Upland Sandpiper, Northern Blazing Star, White-topped Aster, Upright Bindweed, Northern Black Racer, Sleepy Duskywing.
- East of the Turnpike – Slender Blue Flag, Piping Plover, American Sea-blite, Flowering Dogwood, New England Cottontail, Spotted Wintergreen

Species of special concern:

- West of the Turnpike – Great Blue Heron, Broad Sallow, Small Reed-grass, Wild Garlic, Barrens Chaetoglaea, Indian Grass, Cobweb Skipper, Dusted Skipper, White Vervain.

- East of the Turnpike – Smooth Winterberry Holly, Spongy Leaved Arrowhead, Pygmyweed, Saltmarsh Sparrow, Saltmarsh Bulrush, Saltmarsh False-foxglove, Dwarf Glasswort, Saltmarsh Tiger Beetle, Beach Wormwood.

Significant Habitats and Natural Communities:

- West of the Turnpike – Red Maple Swamp, Pitch Pine-scrub Oak Barren, Inland Waterfowl/Wading Bird Habitat, Sandplain Grassland Natural Community, Candidate Deer Wintering Areas, Significant Vernal Pools
- East of the Turnpike – Tidal Marsh Estuary Ecosystems, Brackish Tidal Marsh, Salt-hay Saltmarsh, Deer Wintering Areas, Tidal Waterfowl/Wading Bird Habitat, Tern and Plover Nesting Areas, Significant Vernal Pools

Other *BwH* maps of Kennebunk provide further detail with regard to important natural habitat including:

- Riparian Habitats (Map 1) displays the transitional zones between open water and wetlands and dry or upland habitats, including the banks and shores of streams, rivers, ponds, and lakes, and the upland edge of wetlands. This map shows areas around water bodies that approximately correspond with State Shoreland Zoning guidelines which are that “Great Ponds” (ponds of at least 10 acres in size), rivers, coastline, and wetlands at least 10 acres in size are surrounded by a 250’ buffer zone and streams are bordered by 75’ buffer zones. Also shown are National Wetlands Inventory wetlands. Based on these maps, brook trout habitat appears to exist within Branch Brook, western portions of Day Brook and Ward Brook, as well as western portions of the Mousam River and Kennebunk River. Water resources shown include public water supply wells and their associated protection areas as well as aquifers with flows of at least 10 gallons per minute.
- Conserved Land and Undeveloped Habitat (Map 3) shows development corridors, large blocks of undeveloped land (with acreage in some cases) and natural corridors for the movement of wildlife including road and water crossings. It provides a very complete picture of the complexity of co-existing development and wildlife habitat.

BwH lists 166 Focus Areas of Statewide Ecological Significance based on the richness of the ecology in terms of rare plants and animals and “rare and exemplary” natural communities. One of these is in Kennebunk - the Kennebunk Plains and Wells Barrens.

A link to the *Beginning with Habitat’s Map Viewer*, which allows any member of the public to research any area in Maine: <https://webapps2.cgis-solutions.com/beginningwithhabitat/>

A further description of resources available: <https://www.maine.gov/ifw/fish-wildlife/wildlife/beginning-with-habitat/municipalities/index.html>

Threats to Natural Resources

The importance of protecting and preserving native plants and animals cannot be overstated. One of the threats to Maine’s forest stock, agricultural yield and human health is the spread of invasive insects such as the emerald ash borer, the brown marmorated stink bug, browntail moth caterpillars, deer ticks, spotted lantern-fly, and many more, the presence of which are closely tracked by the State. Dead spruce and ash trees litter the forest and landowners’ parcels. Other invasive plants crowd out native plants, and invaders include Japanese knotweed, floribunda rose, Japanese barberry, Oriental bittersweet, garlic mustard, cypress spurge, and purple



loosestrife. While Kennebunk has no lakes or ponds infested with invasive aquatics, the invasive green crab is present in tidal rivers and the ocean. The State’s use of online messaging has increased citizen knowledge about the danger of invasives, but more involvement by the public is needed.

Other threats to the environment are man-made: discarded plastic bags, balloons and even fishing gear (*see picture to the left*), all of which pose the danger of entrapment and ingestion by marine life.

Kennebunk’s Open Space Plan

The 2004 Town of Kennebunk Open Space Plan, which was approved by voters at a special town meeting, is an extensive study of the Town’s cultural, historic, scenic, recreational and ecologically important open spaces, and is still used by the Planning Board as a subdivision review tool. Embedded in that report is a ranking system for Environmental Priority Areas as High Value Riparian Habitat Corridor (RH), High Value Water Resources (WR) and High Value Plant and/or Animal Corridors (P/AHC), with 1 the highest priority. The summary emphasizes that “they are all priorities.”

Environmental Priority Area	RH	WR	P/AHC
Branch Book Corridor	1	1	3
Blueberry Plains near Branch Brook			3
Branch Brook/Little River Estuary	1		3
Kennebunk River Corridor	1	1	3
Ward Brook/Alewife Pond Corridor	2	2	3
Punky Swamp Corridor	2	2	3
Wonder Brook Corridor	2	2	
Lake Brook/Gooch’s Creek Corridor	1	1	2
Mousam River West Corridor	2	2	2
Cold Water Brook Corridor	3	3	3
Day Brook Corridor	2	2	3
Mousam River East Corridor	2	2	3
Mousam River Back Creek Estuary	1	1	1

Dunes and Shorelands

Coastal dunes provide a buffer against hazards such as wind erosion, wave overtopping and tidal inundation during storm events. They also provide a source of sand to replenish the beach during periods of erosion, as well as habitat for birds, insects and small mammals such as the fox. Natural dunes are irregular in shape and size; man-made dunes are less so. Human foot traffic on dunes weakens the beach grass and other vegetation that holds dunes in place. Dunes and shorelines are in a state of constant change, affected by wind, waves, tides, currents, storm surges and sea level rise. Over time, areas of coastline are impacted unevenly, with some gaining sand and dune structures, and others losing it. In Kennebunk, beaches and dunes are undergoing erosion. Postcard photos of the shoreline taken in the 1950s show much wider beaches than today, with a generous strip of lawn and sidewalk between the sand and Beach Avenue. Middle Beach,



January 2018 nor’easter – Boothby Road and Beach Avenue

which today is composed of cobble, was a sandy beach. Most notably, no seawall existed. Over the past several years, the Beach Avenue seawall and adjacent sidewalk and roadway have required multiple repairs and reinforcement after damage sustained during nor'easters. Water routinely breaches the sea wall during extreme high tides, with the Middle Beach area most impacted, throwing cobble and seaweed into the roadway. Although houses along this section of Kennebunk's coastline are situated predominantly on the west side of Beach Avenue, some homeowners have had to undertake repairs after storms, and some have proactively raised their homes onto higher foundations. Hedges of *rosa rugosa* used at many homes to catch cobble crossing the roadway are augmented in many cases by ever-rising stone and concrete sea walls designed to keep seawater out.

Along "the cove," that protected area of ocean just south of Lord's Point, houses – most dating back to the early 1900s – are on small direct-waterfront lots. A few homeowners are engaged in elevating, or constructing small dune systems for protection.

Along more-vulnerable Great Hill Road, part of which is little more than a rock-fortified causeway that separates frontal dunes from back dunes and marsh, the land rises at the end where it meets the Mousam River, and homeowners have undertaken shoreline stabilization projects.

The dune system along Parson's Beach and Crescent Beach is heavily vegetated, with few houses along that section of beach situated in the frontal dune.

Maintaining the integrity of Kennebunk's coastline is important from an economic standpoint as well as quality-of-life. Homes along the coastline generate roughly 40% of the Town's total property tax revenues; beach parking fees provide revenue to the Town; and beach visitors are the engine that drives the success of local restaurants, hotels and shops. To protect the coastline, the Town's Shoreland Overlay District encompasses lands lying within 250 feet of the Atlantic Ocean and along the three rivers that flow into it. Performance standards that comply with the Shoreland Zoning Act specify setbacks for structures, permitted uses, and lot coverage. *(See Climate Change topic area for more discussion on coastal vulnerabilities)*

Southern Maine Planning & Development Commission is working with six member towns – Kennebunk, Kennebunkport, Kittery, Wells, Ogunquit and York – on its Regional Sustainability and Resilience Program, with a goal of increasing resilience by coordinating climate change mitigation and adaptation planning and strategy implementation. A link to the program's work plan can be accessed at https://smpdc.org/vertical/sites/%7B14E8B741-214C-42E2-BE74-5AA9EE0A3EFD%7D/uploads/Regional_Sustainability_and_Resilience_Program_Work_Plan_Final_042320.pdf

Scenic Vistas

Kennebunk has a wealth of scenic areas ripe for photo opportunities, enjoyment during a walk, or seen during a ride around town. Some notable vistas include:

- Summer Street Historic District, from Route 1 east to Port Road, a showcase of well-preserved Italianate, Second Empire, Federal and Victorian houses;
- Kennebunk River upstream and Kennebunk Harbor downstream, as viewed from the Lanigan Bridge on Western Avenue;
- The "beach cruise" - Beach Avenue along Gooch's, Middle and Mother's Beaches;
- Parsons Beach Road, which borders an equine facility and provides an overview of salt marshes, Back Creek and rolling hills;

- Alewife Road, from Cole Road east to Thompson Road, a winding, hilly trip through the historic Alewife Plains farm corridor;
- Gooch’s Creek and associated salt marshes, as viewed from the Beach Avenue bridge;
- Lake Brook and its salt marshes, as viewed from the Western Avenue bridge;
- Kennebunk Plains and Wells Barrens from Webber Hill Road, especially when purple-flowered Northern Blazing Star wildflowers are in bloom;
- Kennebunk River and the remains of 19th century shipbuilding wharves in the former Landing village as viewed from Durrell’s Bridge;
- Mousam River as seen from the Mill Street Bridge as it cascades over the dam;
- Kennebunk River as seen from Old Port Road;
- The Mousam River and salt marshes just to the west of the Bridle Trail (*seen here to the right*), a popular walking path.



Goals, Policies and Strategies

State Goal:

- To protect the State's other critical natural resources, including without limitation, wetlands, wildlife and fisheries habitat, sand dunes, shorelands, scenic vistas, and unique natural areas.

Local Goal:

- To protect, maintain and, where possible, improve the quality of the Town’s natural environment and resources – namely:
 - Wetlands
 - Wildlife and Fisheries habitat
 - Sand dunes
 - Shorelands
 - Scenic Vistas
 - Unique natural areas

Policies:

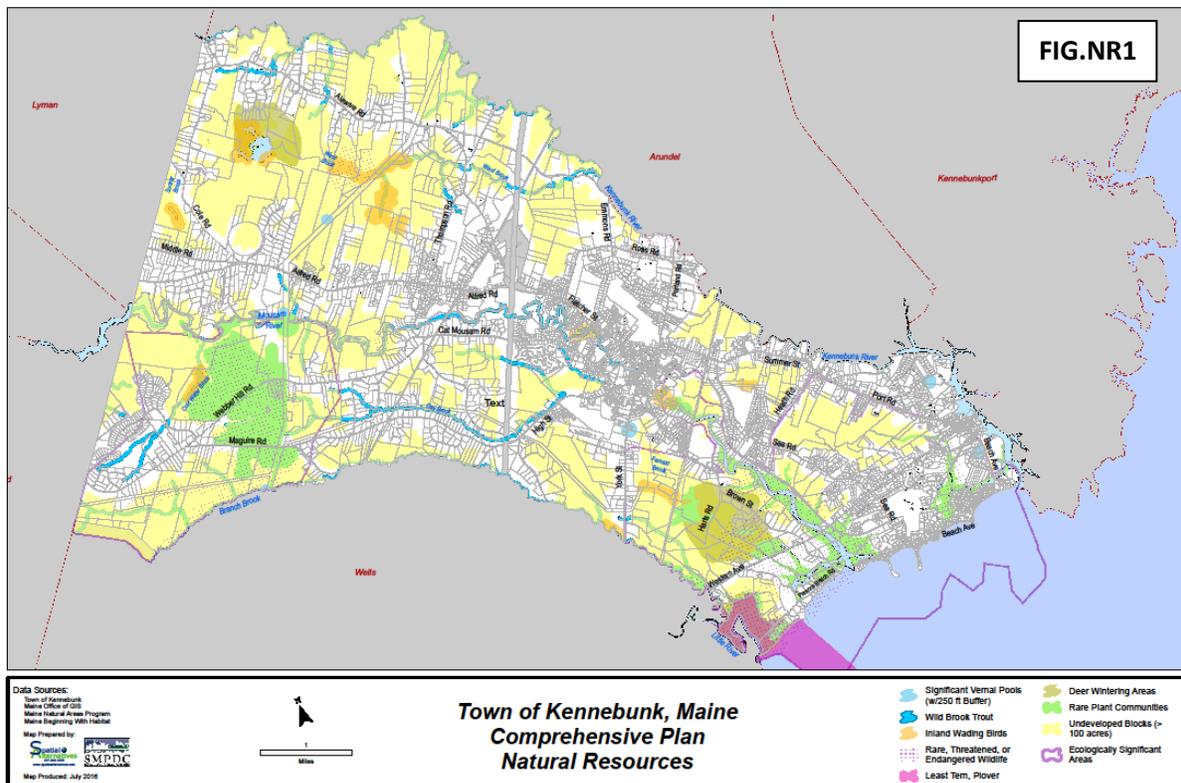
- To conserve critical natural resources in the community, including wetlands, habitat corridors, scenic vistas.
- To coordinate with neighboring communities and regional and state resource agencies to protect shared critical natural resources.
- The Town should continue to conserve significant wetlands, riparian areas, and habitat corridors.

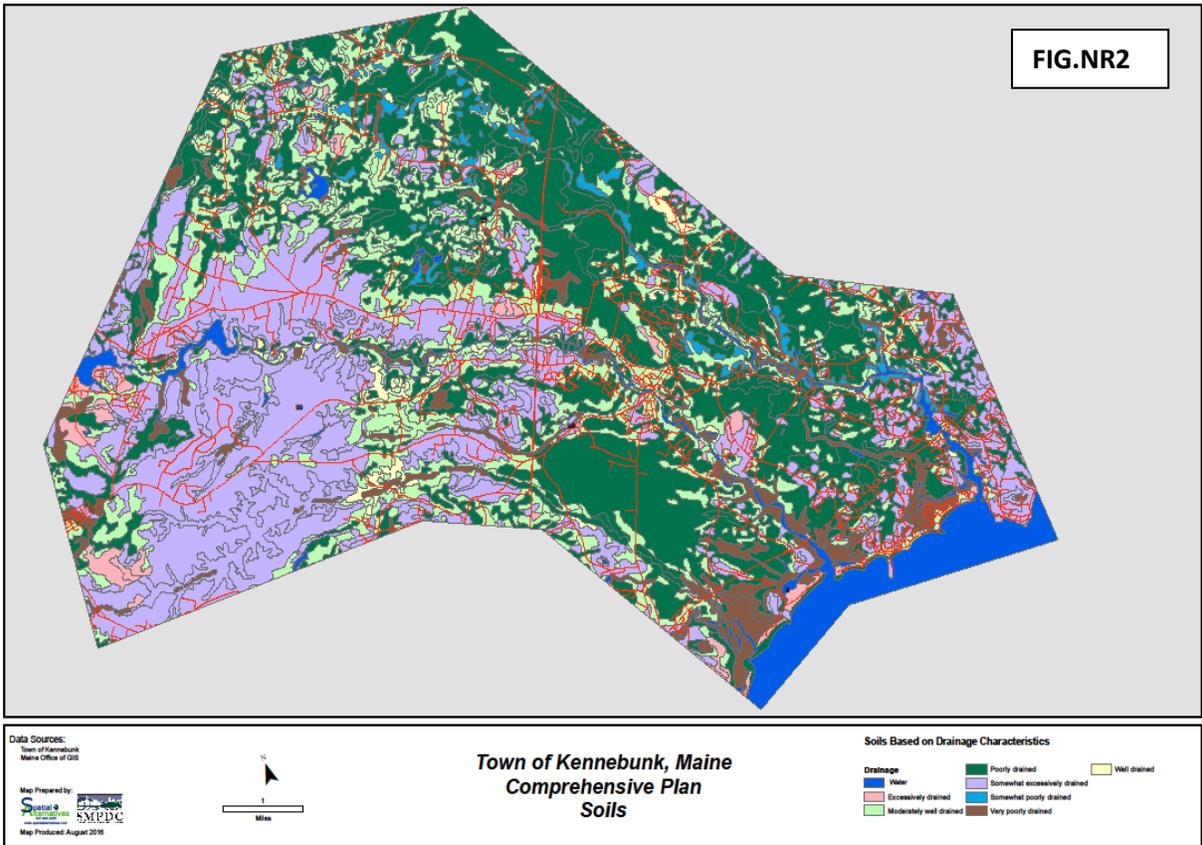
Strategies:

Timeframes: Short term = 0-3 years; Medium term = 3-5 years; Long term = 5+ years

Description	Timeframe	Responsible Parties
<i>Continue to require developers to identify on-site critical natural resources and provide protection by measures that include site design modification, construction timing, and/or extent of excavation</i>	<i>Ongoing</i>	<i>Required in Performance Standards</i>
<i>Continue to initiate and/or participate in interlocal and/or regional planning, management, and/or regulatory efforts to safeguard shared critical and important natural resources such as the Kennebunk and Mousam Rivers</i>	<i>Ongoing</i>	<i>Planning Board, Select Board, Community Planning</i>

		Department
Continue to support and broker public/private partnerships to protect critical and important natural resources using conservation easements, purchase of land and other preservation techniques	Ongoing	Planning Board, Select Board
Create and provide information to developers and landowners regarding the subject of vernal pools and their role in the maintenance of healthy ecosystems	Ongoing	Conservation Commission
Create and make available information to those residing near critical or important natural resources about current tax programs and applicable local, state or federal regulations	Ongoing	Conservation Commission
To better protect wildlife corridors and wetlands functions, upgrade Performance Standards to require deeper wetlands setbacks and buffers, as well as mitigation of "nibbling away" activities that cumulatively impact the overall function of watersheds and wildlife corridors	Short Term	Conservation Commission, Planning Board
Modify Subdivision Regulations and zoning ordinances to require use of Beginning with Habitat Maps as an initial step in reviewing subdivision applications	Short Term	Planning Board
Review land use ordinances to ensure they are consistent with applicable state law for critical natural resources	Short Term	Planning Board
Appoint an ad hoc committee to update the Town's 2004 Open Space Plan to recognize progress made in preserving and protecting lands, identify progress still to be made, and make recommendations on appropriate ordinance changes	Medium Term	Select Board





Larger scale figures can be found in Appendix C.