8 Natural Features

Overview:

Natural features impact the character and beauty of a town and the health, safety, and enjoyment of its residents, making them key in maintaining a strong and sustainable community.

Natural features contribute heavily to Canterbury's character. Certain development types and patterns that occur in town can significantly affect the natural makeup of the town, inextricably linking this chapter to the previous Land Use chapter. The following pages will explore the past and present state of Canterbury's natural and scenic resources and suggest how they should be treated in the future.

Elements:

Discussion of Natural Features and Benefits

Overview of Current Efforts and goals

Challenges and Recommendations

Importance of Natural Features

A Town's extensive undeveloped areas provide residents with clean air, clean water, and a healthy, resilient environment to live in. They also provide a source of locally grown food, forest products and other benefits. Canterbury's residents have consistently expressed their desire to protect and preserve the Town's natural resources, rural character, and scenic beauty for the health, safety, and enjoyment of current and future generations. Many of these resources are irreplaceable and need to be intentionally conserved for future generations.

Canterbury's natural resources display the influences of both man and nature. The hills, valleys, soils, slopes, water resources and plants and animals that live in town are all natural resources. The impacts of working the land for farming and forestry over many generations have had a profound effect upon the fields and forests seen today. Properly managed working lands are consistent with many of the conservation goals of this Plan for Tomorrow update. Certain conservation goals may be best achieved by retaining some unmanaged natural areas. The tapestry of fields, forests, ponds, wetlands, streams and rivers will continue to evolve. Careful planning can ensure that future generations continue to experience the natural world in the same way as their predecessors.

"Open Space"

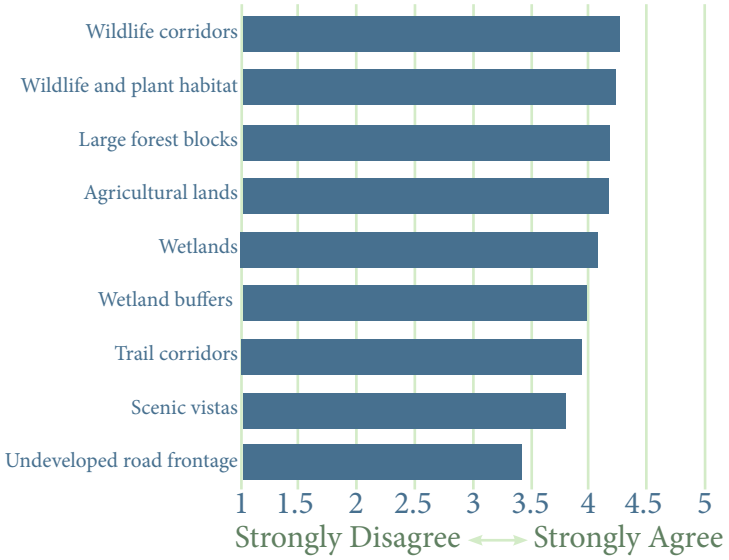
Land that has not been impacted by human development for transportation, housing, business or developed recreational activities. This includes the forests and fields that surround homes and provide natural resources that serve residents. Well, planned developed outdoor recreation areas such as golf courses, swimming beaches and play fields, while not open space, also contribute to the quality of life in Canterbury.

The Town's Thoughts

Throughout the survey, strong appreciation of Canterbury's vast inventory of natural resources was given, specifically for the rural character and high quality of life they provide. Similar to the previous Plan for Tomorrow, overwhelming desire and support was given for preservation of the Town's natural resources, including open space, scenic vistas, agricultural fields, forested areas, undeveloped lands, and the recreational opportunities they provide. Favorite locations frequently mentioned in the Survey were Morrill Pond, Kimball Pond, Shaker Village, Merrimack River, and the town beach

Wildlife corridors were the highest rated priority for conservation of open space, followed by wildlife plant habitat, large forest blocks, and agricultural lands. This feedback provided will help establish a clear and consistent direction for the Town's future preservation of its natural resources.

What are your priorities for conservation of Open Space?



From the Community Survey

"Maintain the rural atmosphere."

"Rural, small town, pretty much what we are now! We love our town, enjoy its beauty and relative quiet."

"We should remain an oasis of forests and wildlife in an area of increasing sprawl and development."

"Keep Canterbury a place for wildlife habitat. Encourage open spaces."

"Preserving our natural resources for coming generations."

"Rural, with plentiful farms and open spaces."

"Environmental protection should be of utmost concern."

Current Efforts

The Town – through the Conservation Commission and with the support of the Board of Selectmen, the participation of residents, and the support of public agencies and public and private funding sources – has actively conserved land for environmental, social, and economic benefit. Conservation has been focused on these special resource areas:

Large contiguous areas with limited residential development and high conservation values
Such as: The Sunset Hill/Bean Hill Highlands north of Hackleboro Road; The rolling terrain, wetlands, and water bodies near the Schoodac Conservation Area south of Baptist Road and east of Morrill Road; and Landscapes surrounding Shaker Village.

Water resources and riparian corridors
Such as: The Merrimack River and adjacent lands and Undeveloped or sparsely developed ponds; significant wetlands; aquifers.

Active farm lands and valuable agricultural soils

Land and trails that support the traditional outdoor recreational activities

Since the 2010 Plan for Tomorrow, the Conservation Commission has taken major steps toward creating an Open Space Plan to guide future conservation in Canterbury and has completed the following steps:

The Conservation Commission received approval from the Board of Selectmen to manage designated parcels as conservation properties. All Town-owned properties were mapped and it was then determine which parcels would be best to maintain undeveloped to serve the Town's Conservation goals.

Regularly update an index of all conservation property in Town, categorizing ownership and type of conservation by the following categories:

- **Public/Nonprofit Conservation Land (full fee ownership)**
- **Town-Owned Conservation Land (full fee ownership)**
- **Private Land with a Conservation Easement Held by the Town**
- **Private Land with a Conservation Easement Held by Nonprofit or Agency**

A set of maps that are included in the appendix were created detailing key natural resources in Town. The Commission uses these maps to evaluate the conservation value of properties when they become available for permanent protection. The Planning Board and the Board of Selectmen also have these maps so that natural resource information can be used in land use and policy decisions.

Conducted varying levels of assessments on notable conservation areas in town including: Natural Resource Inventories of Schoodac Conservation Area, Sawyers Ferry Forest, Rocky Pond Forest, and Misery Road Lot; Rapid Ecological Assessments of Canterbury Town Forest (on Brian Bush Road), and Hannah Moor Lot (on Abbott and Baptist Hill Roads); and management plans for the Kimball Pond Conservation Area, and Robert S. Fife Conservation Area.

Created an initial co-occurrence map using unweighted data from the natural resource maps and the conservation properties map to identify areas with the densest occurrence of natural resources. In 2022, continued work to update the co-occurrence map using weighted data. The updated maps are included in the appendix and future iterations will provide the basis of the Town's Open Space Plan by identifying landscapes with greatest conservation value as high priorities for conservation.

Recent Conservation Purchases

High-value conservation properties conserved through purchase or conservation easement since 2005 are shown in the table below, the boundaries and type of all conservation lands in Town can be observed in the Conservation Lands map included.

Name	Acres	Location
Robert S. Fife Conservation Area	49	West of Kimball Pond Road
Merrimack River Conservation Area	600+	Forest and frontage along the Merrimack River
Muchyedo Banks Wildlife Management Area	291	Along the Merrimack River off Shoestring Road (previously slated to be an ash dump for the regional incinerator)
Spender Meadow	118	Adjacent to the Morrill Road Wildlife Management Area
Sloping Acres Farm	37	North of west road (active dairy farm)
Several other conservation easements on private properties		

Land, Water, Air, Plants, Wildlife Habitat and Natural Communities:

Canterbury's land is diverse as a result of the various land forms and the impacts of glaciers. As the glaciers crossed the Town 10,000 years ago, they exposed ledge outcrops and distributed soil in various ways. Sandy soils are present along the Merrimack and Soucook Rivers, deposited by water flow from glacial melt. At higher elevations glacial till soils can be found and to the north there are shallow soils with ledge outcroppings. While hard pans, rocky and poorly drained soils are common throughout town there are select areas of productive soils cleared for agriculture. Areas along the Merrimack River are some of the finest agricultural soils in the state.

Soils in Canterbury

The Soils & Agricultural Land map included can be used to guide both conservation and development decisions related to farmland.

Soil Suitability	Acres	% of Town Acreage
Soils are prime for all farmland	1,385	4.8%
Soils for farmland of statewide importance	1,863	6.5%
Soils for farmland of local importance	16,555	57.7%
Soils are for prime farmland if protected from flooding or not frequently flooded	203	0.7%

Historically much of the town was cleared for agriculture, including grazing. While some fields remain, many areas have reverted to forest. The numerous steep slopes, shallow soils, ledges, and wetlands define much of the Town's area and have presented constraints for development. Present construction methods have allowed building on sites that were previously rendered unbuildable.

Surface Waters

Canterbury's brooks, streams and ponds contribute water to wetlands and recharge the ground water supply that provide residents with drinking water. Undisturbed natural vegetation in the hills and along the banks of streams provides erosion control, which enhances water quality. The riparian corridors along streams are highly prized by many creatures. The Town's waters are divided into three watersheds that eventually drain to the Merrimack River:

- **From the highest hills in the north, the eastern slopes drain towards the Soucook River**
- **The western slopes drain directly towards the Merrimack River**
- **The central area of Town drains south towards Concord in several streams**

The Merrimack River is the most significant water resource and has been identified as a conservation priority by residents. Great progress has been made by the Town in conserving river frontage and adjacent agricultural land including a 600+-acre farm now privately owned with a conservation easement, and the Muchydo Banks Wildlife Management Area (managed by NH Fish & Game) that was once threatened with development as an ash dump.

The primary sources of water pollution are non-point sources. These include siltation from soil disturbance and highway maintenance as well as runoff from roads, home sites, and other developed areas.

Canterbury Water Resources

The Water Resources and Drinking Water Maps included depict all of the water resources in Town, the table below lists the surface waters grouped by watershed.

Merrimack River with several horseshoe ponds
Burnham Brook
a. Morrill Pond (at Hackleboro Orchard)
b. Kimball Pond and adjacent wetlands
c. Wetlands east of Rte 132 across from Wilson Road
d. Wetlands north of new Road near Pickard Road
e. Brook from below Morrill Pond draining west towards the Big Meadow
f. Horseshoe Pond which drains to wetlands and to Burnham Brook
Hazelton Brook with major wetlands
Forrest Pond Brook
a. Forrest Pond
b. Water falls on Forrest Pond Brook
Bryant Brook
a. The Big Meadow
b. Waterfalls and old mill site behind historic house west of NH 132
Hayward Brook
a. Crane Neck Pond
b. Morrill Mill Pond
c. Mill site below Morrill Mill Pond
d. Spender Meadow
e. Schoodac Wetlands
f. Wetland along Hayward Brook south of New Road

Pickard Brook
a. Several major wetlands and minor water falls along brook
Brook east of Baptist Hill Road and West of Shaker Road
a. Pond at headwaters north of Baptist Hill Road
b. Major wetlands along brook including Shaker meadow
c. Peverly Meadow
d. Peverly Falls below the Meadow
Shaker Ponds
a. Runaway Pond
b. Long Pond
c. Carding Mill Pond
d. Two ponds at the village
e. The long ditch
Gues Meadow Brook
a. Lyford Pond
b. New Pond
c. Wetlands along Gues Meadow Brook
d. Pond east of Snowshoe Hill and brook below it
Soucook River
a. Rocky Pond
Flag Hole Marsh

Wetlands

The importance of wetlands to the whole ecosystem and to the health, safety and welfare of the public has been recognized in both Federal and New Hampshire legislation and by residents. In addition to providing important support for wildlife habitats, wetlands protect drinking water supplies by filtering out toxins and nutrients and by helping to recharge aquifers. Wetlands also play an important role in minimizing flood damage by storing excess runoff.

Wetlands are defined within the Town Ordinance as an area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

The main types of wetlands in Canterbury are forested swamps, shrub thickets, emergent marshes and wet meadows, aquatic beds and some bogs and fens. Each corresponds to different drainage and flooding characteristics and vegetation cover.

Wetlands in Canterbury

Wetland Type	Acres	% of Town Acreage
Freshwater Emergent Wetland	1,481	5.2%
Freshwater Forested/Shrub Wetland	1,943	6.8%
Freshwater Pond	682	2.4%
Riverine	403	1.4%
Lake	351	1.2%

There are numerous threats to wetlands including filling, dredging and alteration to drainage, sediment inputs, and point and non-point pollution runoff.

Groundwater and Drinking Water Supply

All Canterbury households depend on ground water for domestic use. Most residents rely upon individual wells while there are several small community public water supply systems. Ground water is present in the fractured bedrock and in the soils above it. Older dug wells draw water from the shallower soils while most new wells are drilled in bedrock. The sands of the river valley are generally too fine to be suitable for a large capacity municipal well. Water derived from bedrock in Canterbury is generally abundant but commonly contains high iron and manganese components in metamorphic formations. There are small areas of granite bedrock that provide lesser amounts of high-quality water. Shallow dug wells are increasingly susceptible to contamination and drought.

Historically, Canterbury has had adequate uncontaminated groundwater. Because residents obtain water from their own wells, efforts to protect groundwater quality should remain a Town wide priority.

Air Quality

Air quality problems in New Hampshire are mostly created elsewhere and must be solved at a state, national, or international level. The abundant forest cover in Canterbury has a positive impact upon local air quality. Local sources of air pollution include Interstate 93, incinerators, and power plants, outdated or improperly run wood stoves and furnaces, brush burning, transportation, and numerous small engines powering everything from lawn mowers to recreational vehicles.

Plants, Wildlife Habitat, and Natural Communities

Habitat protection is critical to the conservation of plants, animals and the general quality of life for residents in Canterbury. Undeveloped areas of open space encourage and protect species diversity, as well as enhance aesthetic enjoyment, recreation, and education.

Canterbury has unique natural communities, some of which contain fragile habitats for rare and endangered species including along the Merrimack River and other places in Town. Fragmentation of large blocks of open space into smaller tracts has adverse impacts upon wildlife, forestry, and other conservation values.

Through the years some areas have been placed under permanent protection through acquisition by the Town, the State and private conservation groups, while other land remains privately owned and has been protected through conservation easements.

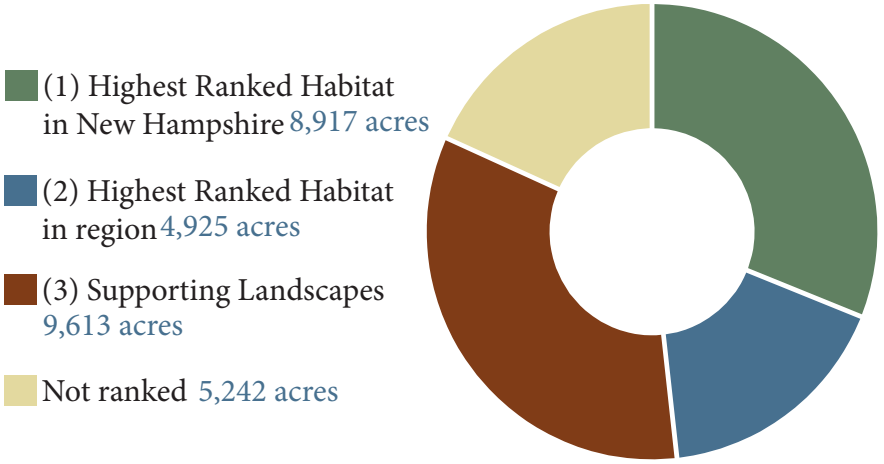
Currently there are several large areas of contiguous open space in Town including the Sunset Hill/Bean Hill Highlands north of Hackleboro Road; The rolling terrain, wetlands and water bodies near the Schoodac Conservation Area south of Baptist Road and east of Morrill Road; and the landscapes surrounding Shaker Village.

These large swaths of land provide a wide range of habitat types that are critical for large mammal species and other species intolerant of human influences. These areas also provide sources for clean water and forest resources. Much of the land in these areas is categorized by The Nature Conservancy as "More Resilient" to climate change.

The cumulative effect of scattered development on larger contiguous wildlife habitats is an important issue to be considered as part of zoning and subdivision regulations.

Habitat Tiers

Wildlife Action Plan data ranking quality of habitat in Canterbury, the location of these areas can be seen in the Wildlife Habitat Tiers map.



Benefits and Uses:

Quiet Enjoyment

Experiencing a quiet rural lifestyle is a major reason people live in or move to Canterbury. This quiet enjoyment was cited frequently in both the most recent and past resident surveys. However, Canterbury experiences noise generated on both sides of Town, which should be monitored.

On Canterbury's West side, I-93 can produce traffic noise and undesirable air quality. It is expected that traffic volumes on the highway will increase over time. The benefit of I-93 is that NH 132, which runs parallel, will remain local in nature and is an unlikely target to be expanded to accommodate increased regional traffic.

The town also faces increasing noise potential on its east side with the development and expansion of the New Hampshire Motor Speedway in Loudon. Noise from the track can be heard throughout much of Canterbury during race and practice events, as well as recently approved non-race events such as concerts. Traffic on event days can impinge on the rural character of the Town.

Agriculture

Agricultural lands are critical resources to Canterbury for their ability to produce food, provide wildlife habitat, and offer scenic vistas.

The agricultural heritage of the Town is evident in the numerous fields located along most of the roads. Decades ago, the now empty fields provided food for people and farm animals. With the industrialization and globalization of food supply, the need for many of these fields for agricultural production has waned. Many of the town's fields have been subdivided into residential housing lots. The fragmentation has limited the ability to produce traditional agricultural products. Some of these fields remain mowed for hay while others are no longer in production.

Despite the changes in the Town's agricultural landscape, one commercial orchard, two commercial dairy farms – one also providing a wide range of organic meats and produce, and several small farms producing everything from fresh produce to distilled spirits remain active.

In recent years agriculture has changed leading to many residents having farm animals on their property, and more vegetable production. In Canterbury many producers sell their products through farm stands and a farmer's market. In the spring, maple production occurs throughout Town. There is a community appreciation for locally grown agricultural products.

The Town's recent protection of 600 acres, once owned by a commercial sod farm along the Merrimack River was a major step in ensuring continued agricultural production on the Town's best agricultural soils.

Active Agricultural Lands in Canterbury

The Existing Land Use map included shows all agriculture sites as well as the other categories of land uses in Town.

Rural Character and Scenic Beauty

The visual elements of rural character in Canterbury are the traditional working landscape and land use patterns relating to agricultural and forestry heritage, the open fields, undeveloped hillsides, and the scenic roads lined with mature trees and old stone walls. A small population in combination with large lots has traditionally supported the scenic natural environment. As the Town grows and residential development increases these qualities can be diminished when not carefully managed.

"Scenic roads" and their rights-of-way that may be bordered by stone walls and mature trees are key features that should be preserved. State statute provides that for designated scenic roads, cutting of trees, widening, or any other activity that may change the character of the road should be subject to review by the Planning Board at a public meeting.

"Scenic vistas" or "viewsheds" are areas of scenic beauty as viewed from Town roads and vantage points that are enjoyed by many residents and visitors. Conservation of these views, which are generally on private land, will require sensitivity, resources, planning and cooperation. The challenge is to adopt a method for protection using both qualitative and quantitative criteria. A balance between scenic considerations, private property rights and practical needs is achievable.

Gravel and Other Mineral Extraction

Sand, gravel, and bedrock mineral extraction can have a profound and permanent impact upon the landscape and the natural resources of the Town. These impacts may include changes to the quantity and quality of water leaving the site, destruction of wildlife habitat, adverse scenic impacts, and impact on abutters.

However, mining is a commercial land use that can benefit the local economy and private landowners. Proper erosion control and reclamation techniques used in the extraction of gravel and other minerals can reduce the impact on the environment and the land can later be returned to other productive uses. Mineral extraction may often precede conversion of land from an undeveloped state to a more intensive commercial or residential use.

Outdoor Recreation

Outdoor recreation takes many forms and has many positive attributes for the Town and the physical, social, and mental wellbeing of its residents. Outdoor activities promote physical activity, connection between community members, and appreciation for the natural world.

Outdoor recreation in this section of the Plan for Tomorrow may include non-motorized activities such as walking, hiking, bike riding, horseback riding, canoing, kayaking, swimming, cross country skiing and snowshoeing as well as motorized activities such as snowmobiling and riding ATVs. These activities all rely on access to the outdoors that may include formal and informal trails, including the routes maintained by the Sno-Shakers Snowmobile Club.

Much of the outdoor recreation in Canterbury occurs on privately owned property that landowners leave open for public enjoyment. An increasing population would increase the demand for these spaces. Landowners have the right to post their property, restricting access, which would stress the remaining sites further. Promoting respect and sensibility of the recreating public and securing trail privileges from willing landowners are ways to help ensure the continuing availability of outdoor recreation space.

From the Survey

When asked about the town providing recreational facilities residents overwhelmingly selected adding more marked and maintained trails as their first choice, followed by a Merrimack River boat launch, and more waterfront recreation

Objectives and Recommendations

This chapter has focused on the Town's current natural features and character and has described the importance of their protection in the face of potential threats. There are a variety of strategies to conserve natural resources and preserve the quiet and scenic character found in Canterbury.

Objective 1

Conserve natural resources and habitats for people, plants, and wildlife and promote climate resilience locally and regionally.

- In priority habitats and natural areas, prioritize plant and wildlife habitat conservation before allowing building in or changing the natural environment.
- Conserve landscapes and habitats that can mitigate climate change or be most resilient in adapting to climate change.
- Periodically review and update the Open Space Plan with an up to date conservation properties index and natural resource inventory to ensure conservation priorities address changing conditions.
- Continue encouraging and supporting good stewardship of private land to support a variety of conservation goals and reduce potential adverse impacts of land management.

Objective 2

Conserve working landscapes for agriculture and forestry.

- Restrict development on prime agricultural lands to ensure the ability to produce food locally is protected for the benefit of local people and the economy.
- Encourage landowners to protect their remaining fields for agricultural use and to conduct operations in a sustainable manner.
- Support responsible agricultural and forestry endeavors for production of food, wood, and other products for local use and for economic benefit.
- Accommodate evolving trends in agriculture and consider the unique needs of agricultural operations, especially very small-scale operations.

Objective 3

Conserve land, waterbodies, and landscapes that can provide and expand opportunities for outdoor recreation and maintain the Town's rural character and beauty for current and future generations.

- Identify key Town properties and develop a stewardship plan to ensure that they are properly managed to enhance their value for outdoor recreation, wildlife habitat, agriculture, forest management, scenic enjoyment, and to demonstrate good stewardship of natural resources.
- Establish a Town Trails Committee to coordinate the preservation and improvement of the network of trails in order to provide public access to a variety of open space areas for different uses ranging from wildlife observation to motorized recreation.
- Encourage landowners to arrange for permanent protection of important habitats, natural areas, and scenic resources.
- Evaluate and improve zoning and subdivision regulations to limit cumulative adverse effects caused by scattered development on larger contiguous areas.

Objective 4

Protect and conserve the resources that contribute to a healthy place for people to live, including clean air, clean water, and biological diversity.

- Conserve large blocks of unfragmented land to support the multiple beneficial roles they play including wood production, wildlife habitat, clean water, outdoor recreation, climate resilience, and economic stimulus to the Town. Where possible, cooperate with adjacent towns to conserve large areas that cross Town borders.
- Provide public information to build awareness of natural resources, opportunities that exist in Town to enjoy them, and efforts that can be taken to conserve and protect water resources, rare plants, natural communities, and reduce spread of invasive species.
- Protect surface waters, groundwater, and watersheds to ensure clean, potable water for residents.
- Encourage the use of best technologies and other methods to promote clean air.
- Identify opportunities to conserve streams, riparian corridors, and wildlife corridors that connect open spaces.