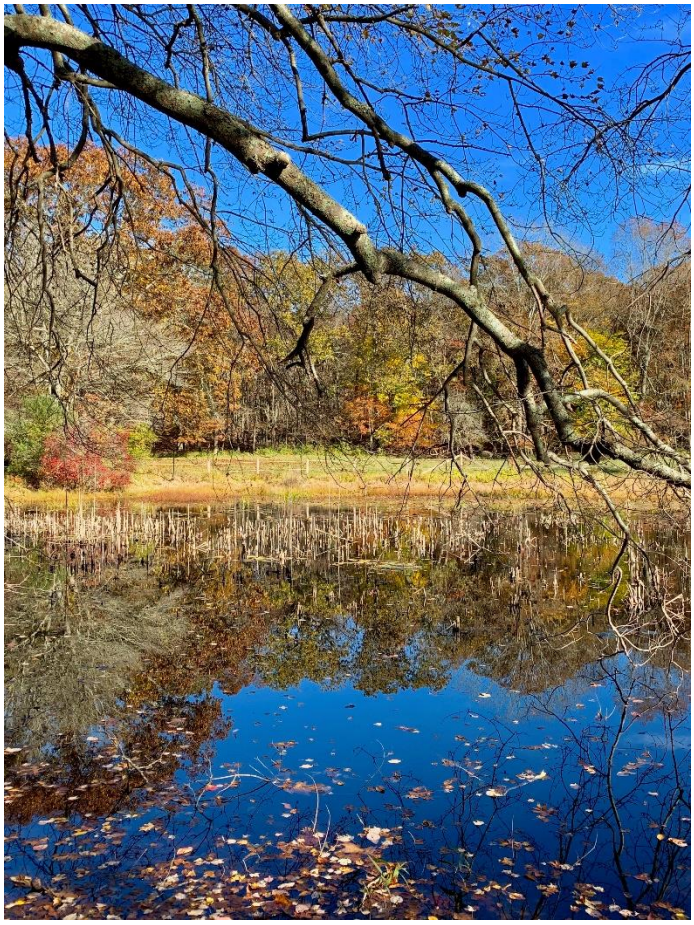
Town of Old Lyme
2020 Open Space Plan Update



Town of Old Lyme
Open Space Commission

Adopted by The Town of Old Lyme Open Space Commission
October 9, 2020

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Town of Old Lyme
2020 Open Space Plan

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Cover photo – McCulloch Family Open Space

Introduction

The 2020 Open Space Plan presents goals for the Town of Old Lyme's protection and stewardship of its open spaces and natural resources, as required by § 20-56 of the town's municipal ordinances.

It follows two previous Old Lyme Open Space plans, written in 1997 and 2004.

The 2010 Old Lyme Plan of Conservation and Development outlined guiding principles for the town's land preservation in this statement…

> "… land should be set aside as open space in accordance with the town's Open Space Plan to preserve important natural resources, protect drainage ways and bodies of water, provide for passive recreation and maintain the visual and aesthetic rural character of the town."

Open space lands are open to all. The Open Space Commission believes the benefits of land conservation, including time in nature and mitigation of climate change, should be shared by everyone.

While this plan advocates for conservation, the Open Space Commission strongly supports diversity, equity, justice and inclusion. Preservation of land should never disenfranchise people of color, people of low income or those with differing beliefs. Indeed, it should advance equity and improve the lives of all.

We wholeheartedly welcome a discussion of how to move forward with the involvement of those of different backgrounds and perspectives, so we can together build a shared future.

Acclaimed scientist Edward O. Wilson stated, "The great challenge of the 21st Century is to raise people everywhere to a decent standard of living, while preserving as much as of the rest of life as possible."

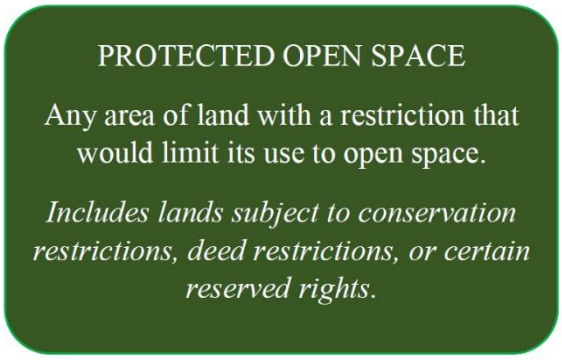
What is "Open Space?"

The Connecticut Department of Energy and Environmental Protection ("DEEP") in its "Green Plan" offers this definition:

> Any area of undeveloped or relatively natural land … the preservation or restriction of the use of which would (A) maintain and enhance the conservation of natural or scenic resources, (B) protect natural streams or water supply, (C) promote conservation of soils, wetlands, beaches or tidal marshes, (D) enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces, (E) enhance public recreation opportunities, or (F) preserve historic sites.[1]

Per DEEP, "open space" does not mean undeveloped natural land or land with an unofficial passive recreational use. For land to be termed "open space," it must be ***preserved*** or ***protected*** for open space purposes.

DEEP offers these distinctions:



DEEP's Green Plan "open space" definition includes privately-owned land preserved by a conservation deed or easement restriction, including land held by individuals or families, and which is not subject to future conversion to a use other than open space.

[1] 2016-2020 Green Plan
Plan Background and Purpose, Pg. 47
Department of Energy and Environmental Protection

The Need for Open Space

To quote DEEP in its **Green Plan** summary, "Investing in protecting lands in the most critical locations will … secure the future of Connecticut's natural heritage, rural landscape, abundance of recreational resources, and strong communities."

Open Space is important because:

- It preserves our forests, meadows, and wetlands.
- It combats climate change.
- It protects our surface water quality and ground water recharge areas.
- It provides habitat for and protects wildlife.
- It improves our physical health and mental well-being by offering active and passive recreation opportunities and access to nature.
- It has a positive economic impact.
- It preserves the historic character of Old Lyme, keeping the town attractive for residents and visitors alike, while offering a desirable setting for economic activity.

Due to growth, Connecticut from 1985 to 2010 lost 180 square miles (115,200 acres) of **forested land** and 62 square miles (39,680 acres) of agricultural fields to development and related land covers, as shown in the two following charts.[2]

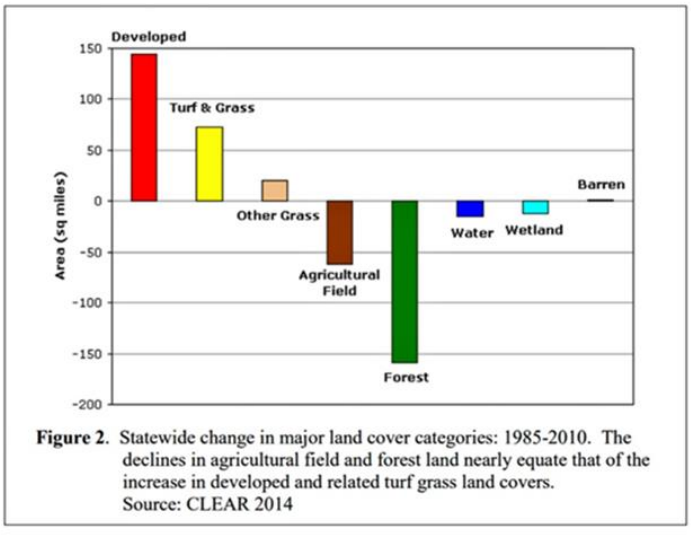
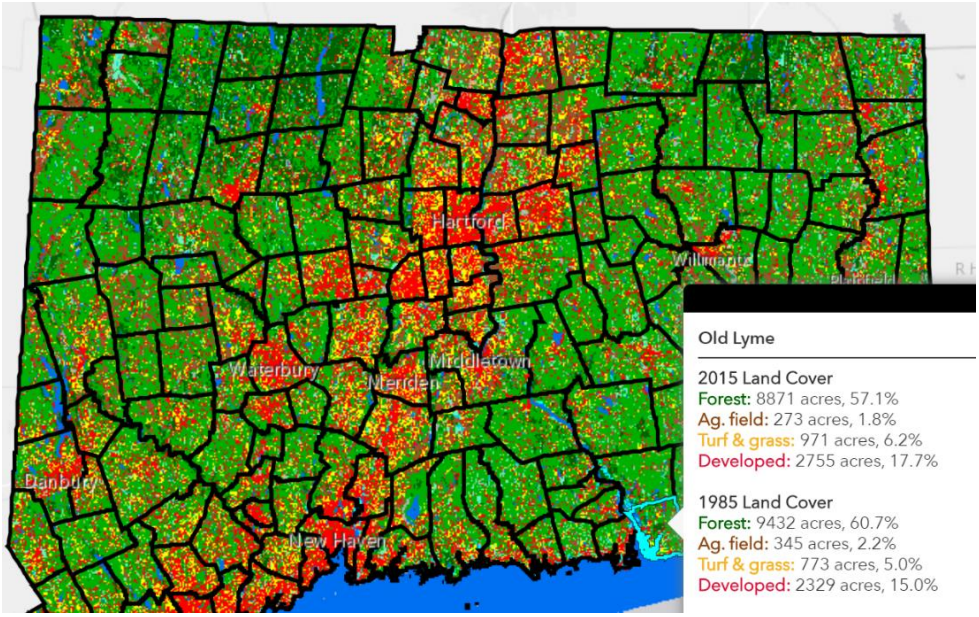


Figure 2. Statewide change in major land cover categories: 1985-2010. The declines in agricultural field and forest land nearly equate that of the increase in developed and related turf grass land covers.
Source: CLEAR 2014

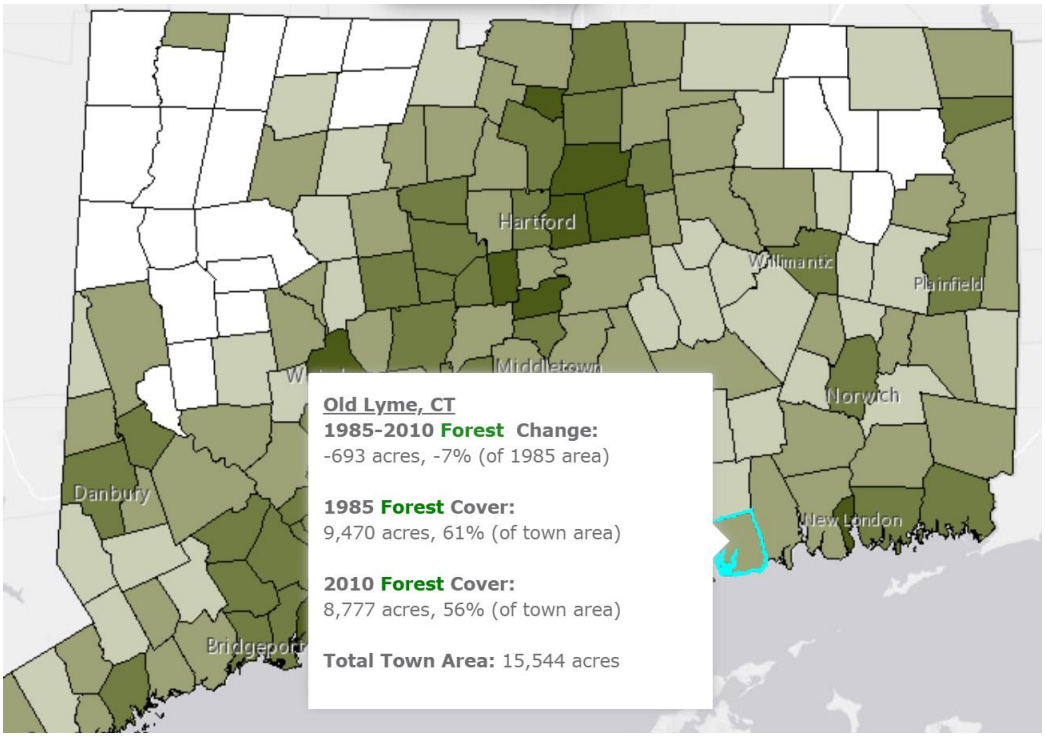
[2] 1985-2015 Change
UConn Center for Land Use Education & Research

UConn's Center for Land Use Education and Research (CLEAR) provided a comparison of **Old Lyme's land cover** over three decades, as shown below from its [Connecticut Land Cover Viewer](). As shown, from 1985 to 2015, 427 acres in town were developed, and 561 acres of forest cover were lost.[3]



[3] [1985-2015 Change]()
UConn Center for Land Use Education & Research

Another chart shows forest change over a slightly different time period.[4]



The loss of forest places an importance on preservation, to ensure that long-term protection goals are met before important natural lands are converted to other uses.[5]

What do we lose when land is deforested?

Forests are an effective way to combat **climate change**, as they absorb carbon dioxide from the atmosphere and incorporate it into their roots, trunks and branches.

Carbon sequestration is a process whereby carbon dioxide, a greenhouse gas that contributes to climate change, is taken from the air by trees and other vegetation and stored within roots, stems and leaves.

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[4] 1985-2015 Change
UConn Center for Land Use Education & Research

[5] 2016-2020 Green Plan
Comprehensive Open Space Acquisition Strategy
Section II. Land Protection Challenges Connecticut DEEP

Carbon storage is the amount of carbon that then becomes bound in trees and other flora, both above and below ground.

The amount of carbon sequestered by land in the United States is dominated by forests, which have annually absorbed 7% to 24% of fossil fuel carbon dioxide (CO2) emissions in the U.S. over the past two decades.[6]

A typical hardwood tree can absorb as much as 48 pounds of carbon dioxide per year. This means it will sequester approximately 1 ton of carbon dioxide by the time it reaches 40 years in age.[7]

The "Keeling Curve" measures seasonal fluctuations in CO2 in the atmosphere. CO2 levels peak in May, just before plants in the northern hemisphere start to remove large amounts of CO2 from the atmosphere during their growing season.[8]

Better land stewardship may have a more important role in fighting climate change than previously thought, according to scientists from The Nature Conservancy and 15 other institutions. Their findings outline large-scale protection, restoration, and improved land management practices that may address climate change.

Mark Tercek, CEO of The Nature Conservancy, said, "The way we manage lands in the future could deliver 37% of the solution to climate change. That is huge potential, so if we are serious about climate change, then we are going to have to get serious about investing in nature, as well as in clean energy and clean transport."

The results of the study indicate that three key options for increasing the number and size of trees, and hence carbon sequestration, are better forestry practices (working timberlands); reforestation; and relevant to this plan, protecting against loss of forests.[9]

Trees are about 50 percent carbon and represent the most dynamic component of the forest ecosystem carbon pool. The carbon inventory in northern U.S. forests is higher than in forests in any other region of the country, partly due to less harvesting.

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[6] The National Climate Assessment

[7] Could Global CO2 Levels be Reduced by Planting Trees?
CO2Meter.com. October 29, 2018

[8] Rise of Carbon Dioxide Unabated, June 04, 2020
Scripps Institution of Oceanography, UC San Diego

[9] Nature is Vital to Beating Climate Change
Nature Conservancy, October 15, 2017

Although forests release some CO2 from natural processes such as decay, a healthy forest stores carbon at a much greater rate than it releases it. Considering that one-half of the weight of dried wood is carbon, trees in a forest hold a lot of carbon. When the enormous amount of carbon stored in forest soils is added to the trees' carbon, the inescapable conclusion is that forests are one of our major carbon storage reservoirs working for us today.[10]

A threat to forest health is also a threat to biodiversity, and research suggests biodiversity and carbon storage -- two of the most vital ecological benefits provided by forests -- are essential to climate change mitigation.

Old growth forests, those most threatened by climate change and other harmful human activities, host more biodiversity and store more carbon than younger forests.[11]

The protection of inland unfragmented forest core lands and vegetated stream buffers helps to absorb and filter **water**, thus reducing pollution carried downstream into Long Island Sound. The protection of uplands adjacent to the state's existing tidal marshes will be necessary to create and maintain this critical habitat as sea levels rise over time.[12]

A CLEAR chart shows streamside or riparian corridors are being lost at a rate of about 1200 acres a year.[13]

The engineering department at Purdue University estimates that approximately eight times more storm water runs off from impervious surfaces, such as streets, sidewalks and roofs than from forested land.

[10] New York State Open Space Conservation Plan, 2016

[11] Trees in forests all over the world are getting younger, shorter
UPI Science News, May 29, 2020

[12] 2016-2020 Green Plan
Comprehensive Open Space Acquisition Strategy
Section V. Purpose of, and Need for, Protected Open Space, Connecticut DEEP

[13] 1985-2015 Change, UConn Center for Land Use Education & Research (CLEAR)

When the percentage of impervious surfaces in a watershed grows there is a corresponding increase in undesirable consequences, including:

- Reduced groundwater recharge; and
- Reduced natural filtration of water—resulting in increased pollution and reduced stream health.[14]

Naturally vegetated open space absorbs nutrients and pollutants from water, acting to cleanse both groundwater and streams. Rainwater is absorbed more effectively by forests than by lawns or impervious paved areas, reducing the severity of flooding. During dry weather, the water previously absorbed by the forests and wetlands is gradually released to streams, so waterways are less likely to dry.

Loss of vegetative cover also causes cold waters to warm, thus rendering habitat unsuitable for native trout, aquatic insects, and other dependent wildlife. Stream banks become unstable, soils harden, and less rainfall is absorbed into the ground.

As a shoreline community, Old Lyme also has habitats termed coastal "blue carbon" – such as saltmarshes, seagrasses, and seaweeds.[15]

Preliminary analysis from the Maine's Climate Council Coastal and Marine Working Group estimates salt marshes and seagrass meadows have the potential to bury substantial amounts of the total carbon sequestered each year. "The healthier the system, the higher the rates of carbon sequestration," says Beverly Johnson, geology professor at Bates College.

In much the same way forests capture carbon dioxide in the atmosphere through photosynthesis and store carbon in soils, marsh and seagrasses remove carbon dioxide through photosynthesis from their surrounding environment.

Seaweeds were previously thought to have the ability to only temporarily take up carbon, since they lack roots, but rather attach to intertidal or subtidal rocks via holdfasts. Recent studies, however, indicate that up to 16 percent of these seaweeds break off and ultimately end up buried in the deep ocean, opening up a vast and yet-to-be quantified potential for storing carbon.

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[14] Economic Benefits of Open Space Preservation
New York State Comptroller, March 2010

[15] Coast offers climate mitigation potential
Susie Arnold, Island Institute, June 19, 2020

Since coastal blue carbon ecosystems are underwater for part or all of the tidal cycle, they also remove carbon dioxide from seawater. A quarter to a third of all atmospheric carbon dioxide ends up in the ocean, causing it to become more acidic. The uptake of carbon dioxide by kelp and seagrasses locally remediates ocean acidification in addition to the sequestration benefits.

As CLEAR states, simple forest cover doesn't tell the whole story. "Core" or inner blocks of forest, that give wildlife "elbow room," are particularly important. These important land covers are also disappearing, as the following chart indicates.

Forests act as climate buffers, moderating temperature extremes and creating local microclimates that can accommodate a greater variety of wildlife. Trees cool the air both by direct shade and by evaporative cooling through their leaves.

Core forest is characterized as blocks of forest at least 300 feet away from non-forested land cover types. Much of Connecticut's core forest areas are state parks & forests and in open space and preserved lands. These large, unfragmented areas of trees and associated understory vegetation are important to many plant, animal, and insect populations for food, shelter, and breeding habitat.

16

[16] 1985-2015 Change
UConn Center for Land Use Education & Research

Complementary to the concept of core forest is **connectivity** which can greatly increase the ecological value of conservation lands. As DEEP states in the Green Plan: One parcel of land lost to development at a critical junction can diminish the conservation value of surrounding lands.

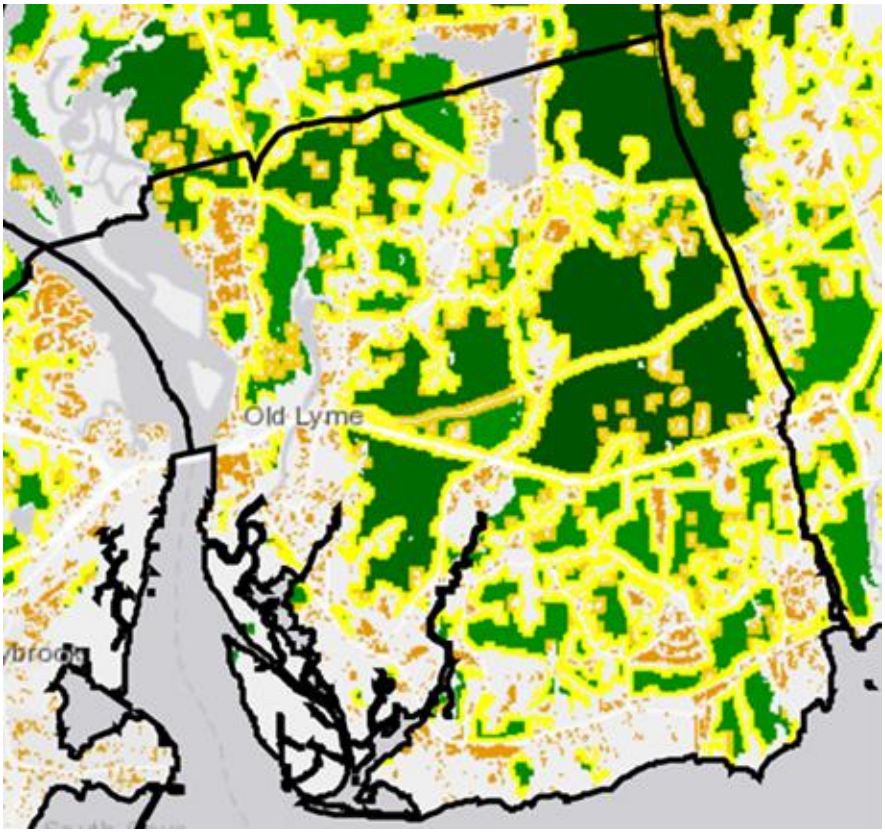
As the 1997 Town Open Space Plan wrote, partially paraphrased,

> **Greenways** are adjacent parcels of open space designed to create an interconnected, unbroken chain of forest, pasture and watercourse.
>
> Greenways are important for several reasons. As land is developed, the individual landowner typically prohibits others from trespassing on his land. Such prohibitions block access to what were ancient highways or trails, wood roads, and assorted shortcuts through woods, fields, and pastures. An active open space program can preserve such access and establish a network of trails through interconnected parcels of land.

Properly designed greenways can provide unobstructed passage for wildlife from one area of town to another. Greenway corridors are places where birds and animals can safely move to feed, seek shelter, or breed. Many animals will partially avoid roads when they can safely move through wild, undisturbed open space.

CLEAR developed a map that includes forest fragmentation layers in Old Lyme.[17]

[17] Forest Fragmentation
UConn Center for Land Use Education & Research



The forest fragmentation tool classifies forests in four general categories:

Patch Forest	forest pixels along the edge of an interior gap in a forest that are degraded by "edge effects" (for example the forest immediately surrounding a small house lot in the middle of the forest)
Edge Forest	forest pixels along the exterior perimeter of a forest that are degraded by "edge effects" (for example the forest immediately along a major highway or large agricultural field)
Perforated Forest	small isolated fragments of forest that are surrounded by non-forest features and completely degraded by "edge effects"
Core Forest	forest pixels that are not degraded by "edge effects." The Landscape Fragmentation Tool further divides these by size.
Small core	smaller than 250 acres
Medium core	between 250 and 500 acres
Large core	larger than 500 acres

The town's 2019 acquisition of 312 acres now comprising the McCulloch Family Open Space, which in turn is connected seamlessly with the Old Lyme Land Trust's 185 Lay Preserve is a successful example of connectivity forming an important greenway.

Large blocks of land are also said to be **resilient** in mitigating climate change. Components of resilient land include complexity/geodiversity and connectivity.

Recent research has shown that geodiversity is a proxy for biological diversity.[18] Complexity or geodiversity that offers different landforms – slopes, valleys, cliffs, varying elevations, vernal

[18] Conserving Nature in a Changing Climate

pools and wetlands - or different surfaces - loamy, clay, sandy or peaty soil - provide a wider range of ecosystems.

The Governor's Steering Committee on Climate Change in 2011 wrote, "The ultimate goal of climate adaptation for Connecticut natural resources is to reduce the risk of environmental degradation including actions that increase resilience. Resiliency is the ability of an intact, well-functioning habitat to accommodate change, both climatic and non-climatic (e.g., invasive species, development pressure, degraded water quality), and return to a well functioning, if slightly altered, state."[19]

The report stated "land acquisition cannot only preserve habitats and species as static features on the Connecticut landscape, but also must accommodate change to maintain habitat or allow for the migration of new habitats. Land acquisition that improves connectivity of critical habitat and migration corridors, especially in forest lands, headwaters, riparian lands and shorelines, is needed to maintain long-term ecosystem resiliency to climate change."

Connecticut's **wildlife** is remarkably diverse. The state is home to 84 species of mammals, 335 species of birds, 50 species of reptiles and amphibians, 169 species of fish and an estimated 20,000 species of invertebrates. This diversity is due to the state's wide range of landscapes, waterscapes and habitats from the coastal plan to our hills.

DEEP reports that about 600 plants and animals are listed as endangered, threatened or of special concern in the state. Loss of habitat is an important reason why plants and animals become endangered.

A New London "County Report of Connecticut's Endangered, Threatened and Special Concern Species" lists over 80 locally "endangered" amphibians, birds, fish, invertebrates, mammals, plants, and reptiles, as well as many more that are "threatened" or of "special concern."

Connecticut's Comprehensive Wildlife Conservation Strategy, now known as the Wildlife Action Plan, was first published by DEEP in 2005, and revised in 2015. This document pinpoints the threats affecting species of greatest concern.

The most significant threats include habitat loss, degradation and fragmentation from development; changes in land use; and competition from non-native invasive species.

Open Space Institute and the North Atlantic Landscape Conservation Cooperative

[19] CT Climate Preparedness Plan 2011
A Report by the Governor's Steering Committee on Climate Change (GSC) Adaptation Subcommittee

Eleven key habitats, such as large upland forest, forested inland wetlands, shrub inland wetlands, large rivers and streams, associated riparian zones, and vernal pools, were identified as critical to wildlife diversity.

Open space can preserve these habitats and, by extension, help protect endangered wildlife.

Birds are vital to our ecosystem by controlling pests, such as insects, and for regenerating nature by pollinating flowers and spreading seeds.

A research report published in the October 4, 2019 issue of "*Science*" found that there are 2.9 billion fewer birds in the United States and Canada now than there were 50 years ago. [20] Not surprisingly, this alarming fact made national news.

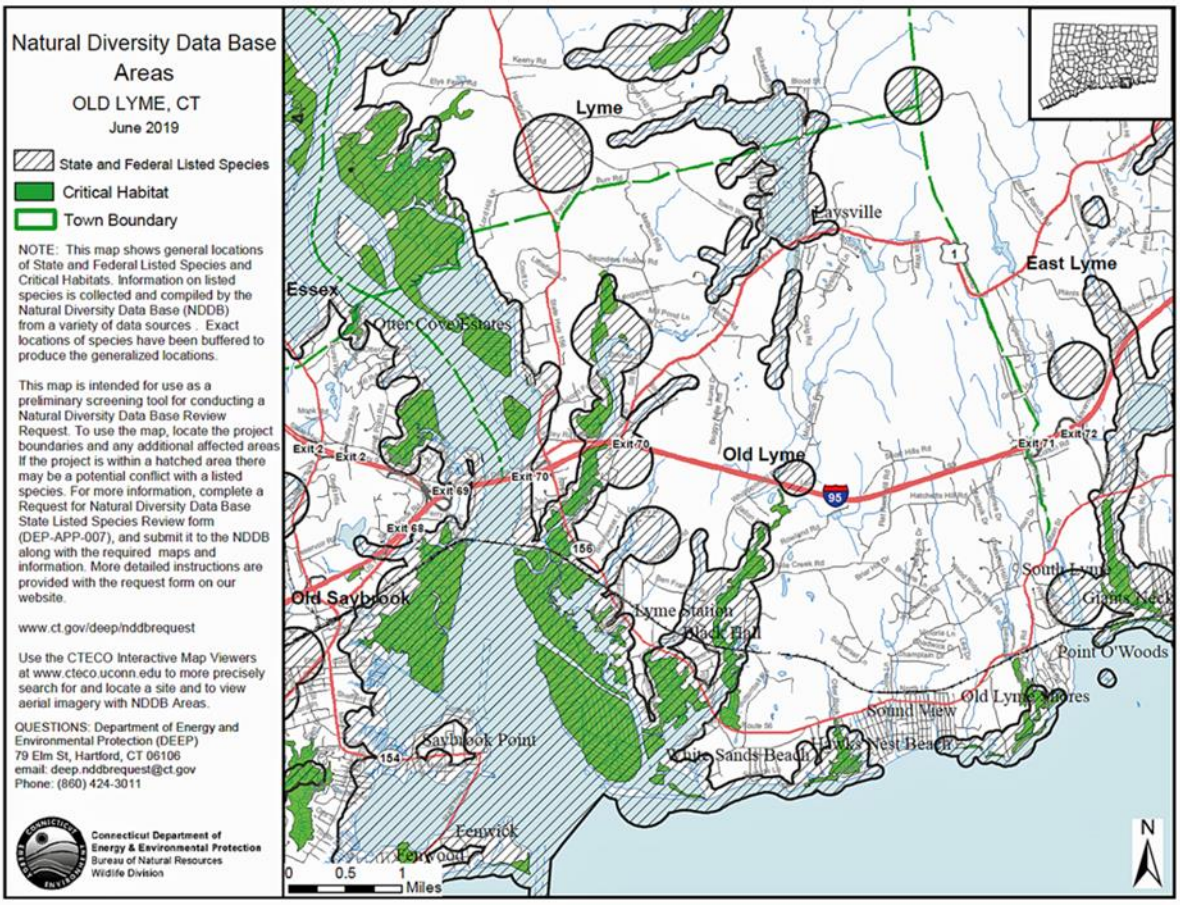
The Connecticut Audubon Society in October 2019 encouraged support for open space preservation on its web site:

> "The bottom line for birds is habitat. [Birds] need suitable places to nest, spend the winter, and rest and feed during migration.
>
> It's critical that the acquisition, preservation, and proper management of open space, including forest land, [be supported] on the state and local level. Strategic acquisition can add to and strengthen the large expanses of intact forest that already exist in parts of Connecticut, for example.
>
> Researchers conclude that large, unfragmented forests in southern New England might serve as refuges for species declining elsewhere. This underscores that conservation isn't something that is needed in distant lands. The condition of habitat right in our [own] towns and cities makes a difference."

The Natural Diversity Data Base on the DEEP website represents approximate locations of endangered, threatened, and special concern species and significant natural communities in Connecticut. The maps can also be used to identify areas of potential conservation concern.

The map below shows general locations of State and Federal Listed Species and Critical Habitats in Old Lyme. (Following the link above will allow you to download the map to view it in greater detail).

[20] Decline of the North American avifauna
Kenneth V. Rosenberg, Adriaan M. Dokter, Peter J. Blancher, John R. Sauer, Adam C. Smith, Paul A. Smith, Jessica C. Stanton, Arvind Panjabi, Laura Helft, Michael Parr, Peter P. Marra



In 2019, the Open Space Commission adopted two relevant policies intended to protect wildlife on town-owned property.

A "**Beaver Policy on Town Open Space**" allows beaver activity to continue as long as it does not threaten critical infrastructure or private property. Non-lethal means can be used to control beaver activity. The Commission recognized that private homeowners may need to deal with beaver activity on their own land, but on town open space land, the Commission endorsed the continued protection of natural habitats and ecological functions.

Beaver ponds and wetlands provide habitat for a wide variety of animals, such as insects, spiders, frogs, salamanders, turtles, fish, ducks, rails, bitterns, flycatchers and owls. Standing trees that die from flooding provide preferred nesting habitat for colonies of great blue herons and cavity-nesting birds, such as wood ducks and hooded mergansers.

Beaver ponds also filter and trap sediments and excess nutrients, serve as water storage and recharge areas, and provide opportunities for canoeing, fishing, wildlife observation and waterfowl hunting.[21]

As time passes, and beavers move to new locations when their food source is exhausted, a meadow area may replace the pond/wetland, providing a new, different habitat for wildlife.

The Open Space Commission adopted a "**Use of Herbicides on Open Space Property**" policy in July, 2019. It states:

> On Town Open Space land, notwithstanding limited circumstances, we approve the following:
>
> Town of Old Lyme Open Space Commission will not allow the use of glyphosate on any parcel of Open Space land;
>
> The Open Space Commission will formulate an environmentally responsible herbicide use policy;
>
> The Open Space Commission will establish an ad-hoc committee to address Open Space property ecology top-down with consideration given to alternative invasive control methods including, but not limited to, biological controls and pond water management (tidal flow restoration).

Nature, open space and outdoor activity are correlated with **health benefits**. A Google search will turn up many links on the relationship between green/open space and physical/mental health.

Researchers are increasingly discovering what weekend hikers and lunchtime park-walkers intrinsically understand: spending time in nature is restorative and calming, of benefit to both our physical and mental well-being.[22]

A recently published article examined the relationship between exposure to green spaces and mental health, and found that "higher levels of exposure to green space were associated with significantly lower levels of symptoms for depression, anxiety, and stress" (Beyer et al., 2014).[23]

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[21] Beaver Fact Sheet, DEEP

[22] Section 2: Resilience in Adult Mental Health Through Access to Natural Areas, see pg. 47
Sarah R. Barbo, Yale School of Forestry & Environmental Studies

[23] Improving Human Health by Increasing Access to Natural Areas
Gentry, Bradford S.; Anderson, Julia E.; Krause, David R.; Tucker, W. Colby; and Tuddenham, Karen A., Forestry & Environmental Studies Publications Series. 49.

People who spend more time in parks and natural settings tend to report higher levels of health and happiness, but new research shows there's actually a magic number for it.

According to a study in the journal Nature Scientific Reports, spending two hours a week strolling a tree-lined street or sitting by a lake can greatly enhance a person's overall sense of well-being.[24]

Numerous peer-reviewed studies have found that proximity to open space increases nearby residents' exercise and physical activity. Other studies have shown a positive correlation between time spent outdoors, in open space, and mental health.[25]

"Studies have proven that even the smallest bit of nature — a single tree, a small patch of flowers, a house plant — can generate health benefits," said Kathleen Wolf, a UW research social scientist in the School of Environmental and Forest Sciences.[26]

The Open Space Commission has actively encouraged residents to "Take a Hike" and enjoy nature to realize these benefits. Rook's Meadow, in the McCulloch Family Open Space, was designed as a peaceful respite, with a public bench for quiet contemplation, plein air painting, reading a book or just taking a relaxing lunch break.

A section from the 1997 Old Lyme Open Space Plan bears repeating:

> Traditionally, the principal perceivable benefits of open space have been the protection of important natural resources and the provision of recreational areas. While these are worthwhile benefits, the **economic considerations of open space** have often been overlooked.
>
> A balance of open space and residential development reduces the long term costs for providing local government services. This simple premise has long range implications for any small town.
>
> The challenge of open space planning is to protect open space, assuring that a full range of housing opportunities remain available and open space acquisition is not used as a growth management tool to halt the construction of additional housing.

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[24] "People who spend more time outdoors lead more fulfilling lives, new research shows" Christopher Ingraham, Washington Post, June 19, 2019

[25] Open Space in New Canaan
New Canaan Conservation Commission in coordination with the New Canaan Land Trust, 2018

[26] UW News (University of Washington
April 16, 2020

The Connecticut Legislature's nonpartisan Office of Legislative Research published a report entitled, "Impact of Open Space on Property Values."[27]

It stated:

> "The economic contributions of public park land and open space are twofold: first, they often increase nearby property values (resulting in more property tax revenue to the town), and, second, the town avoids costs associated with providing municipal services to a residential development that might otherwise be located on the site."

More than 80 studies show that new residential development actually costs more in community services than it brings in from taxes, largely due to the cost of public education. When other community services, such as sewage, utilities, emergency services, etc. are added to the calculus, it quickly becomes apparent that leaving land as open space can actually save [towns] money.

This trend has been well documented, with a study completed by the American Farmland Trust showing that for every $1 received by CT towns in residential taxes, the towns paid between $1.06 and $1.33 in services for that dollar.[28]

At least a dozen studies in New England, five of which were conducted in Connecticut, have supported the observation that there is a positive correlation between proximity to open space and **higher property values**.

The State of Connecticut has also released a research report, which contains the following statements:

- homebuyers are generally willing to pay more for property located close to parks and open space
- it is hard to quantify the impact of open space on property values because of the many different types and uses of open space, the various uses of the land surrounding them, and other factors. But… a 20% increase in value for property adjoining or fronting a passive-use park is "a reasonable starting point."[29]

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[27] IMPACT OF OPEN SPACE ON PROPERTY VALUES
OLR Research Report, 2006-R-0344, May 24, 2006

[28] Open Space in New Canaan
New Canaan Conservation Commission in coordination with the New Canaan Land Trust, 2018

[29] Open Space in New Canaan
New Canaan Conservation Commission in coordination with the New Canaan Land Trust, 2018

Old Lyme Snapshot

Old Lyme is described in the 2010 Plan of Conservation and Development as a "peaceful, serene haven, with its people strongly in tune with the natural world around them."

As shown in the census map below, Old Lyme in 2010 had the lowest population density among all Connecticut shoreline towns, as measured by population per square mile.

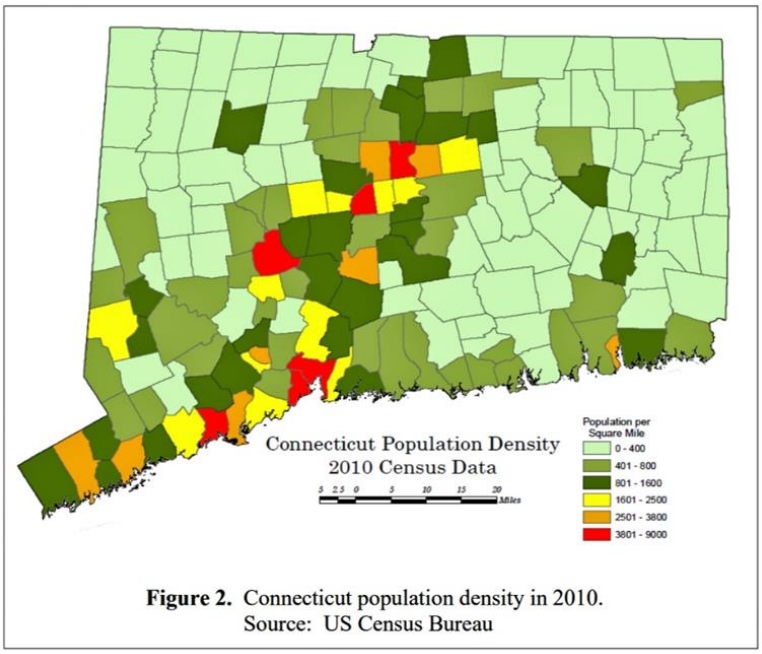


Figure 2. Connecticut population density in 2010.
Source: US Census Bureau

Population Per Square Mile, 2010	
Old Lyme	330.3
New London County	412.2
Connecticut	738.1

The United States Census Bureau estimates that Old Lyme's population may have declined by 4% from 2010 to 2019.

Population estimates, July 1, 2019, (V2019)	**7,306**
Population estimates base, April 1, 2010, (V2019)	7,608
Population, percent change - April 1, 2010 (estimates base) to July 1, 2019, (V2019)	-4.0%
Population, Census, April 1, 2010	7,603

The Old Lyme Economic Development Study, prepared by AdvanceCT (formerly the Connecticut Economic Resource Center "CERC) in May 2020, projects a modest net increase of approximately 132 new household through 2028. See the associated chart below.

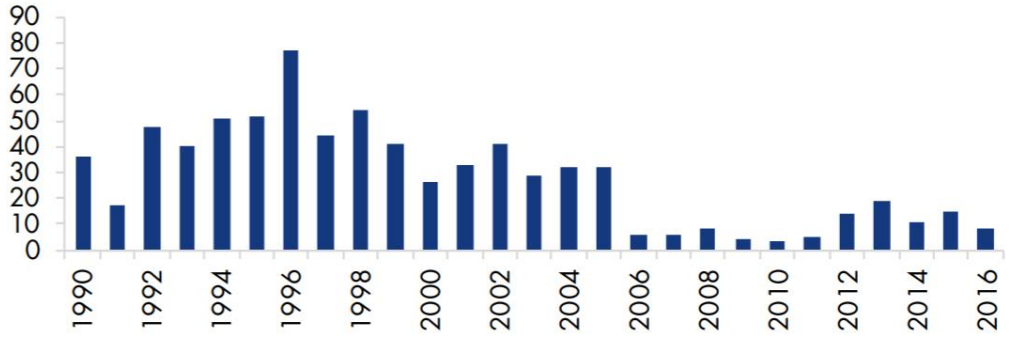
Age of Householder	Headship Rate[10]	Number of Households		Change, 2018-2028
		2018	2028	
15-24	0.0%	0	0	0
25-34	50.6%	277	262	-15
35-44	46.2%	405	458	53
45-54	50.0%	686	500	-186
55-64	63.2%	1185	937	-248
65-74	56.5%	996	1213	217
75-84	63.8%	599	867	268
85 and over	66.2%	232	274	42
Total Households		*4,379*	*4,511*	*132*

Connecticut saw a sharp decline in building permits following the crash of the housing market in the mid-2000's. Statewide building permits have increased by small amounts since 2011, but remain well below the levels seen in the 1980's and 1990's.[30]

Old Lyme's building permits showed a similar drop, with modest recent growth.

Building Permits by Year, 1990-2016: Old Lyme

Source: CT Department of Economic and Community Development



This data is germane to the Open Space Plan as some of the greatest challenges to land conservation are economic and land development pressures. When economic incentives to

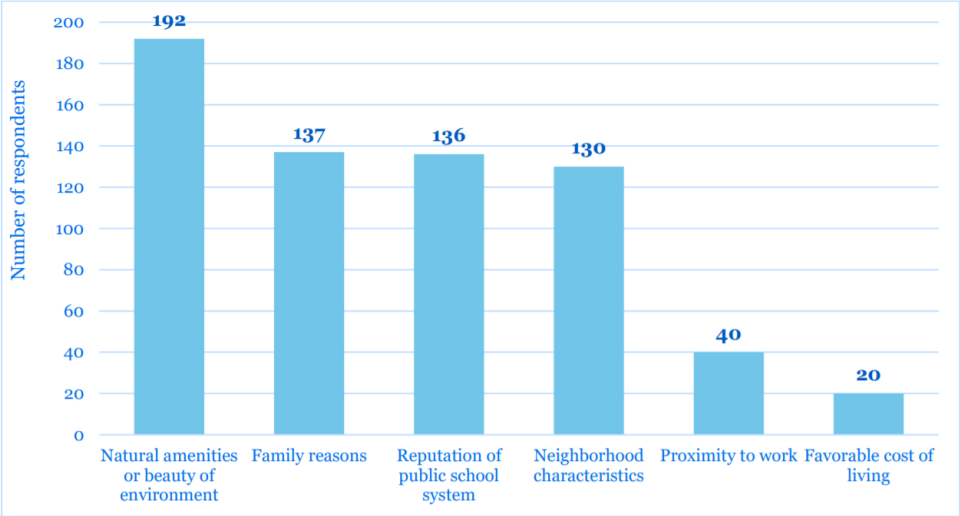
[30] 2018 Housing Data Profiles – Old Lyme Partnership for Strong Communities

develop land outweigh those from conservation purposes, private landowners can be pushed to convert their lands to uses incompatible with open space.[31]

Nevertheless, open space conservation and economic development are not incompatible. AdvanceCT surveyed Old Lyme residents in 2019 in conjunction with the town The Economic Development Commission. [32]

When asked why they chose in live in Old Lyme, the factor residents most often cited – by 29.3% - was natural amenities and beauty of environment (e.g., open space, hiking trails, conserved or protected land, the Connecticut River and its estuary).

Figure 5: Why Respondents Chose to Live in Old Lyme



In reflection, AdvanceCT, in their analysis of "trends and opportunities Old Lyme should consider as part of their economic development strategy," suggest:

- Highlight Old Lyme's natural amenities. The town's natural beauty, location and beaches are cited frequently as some of the town's most important attributes
- Support outdoor recreation. Residents consistently cite outdoor recreation as important.[33]

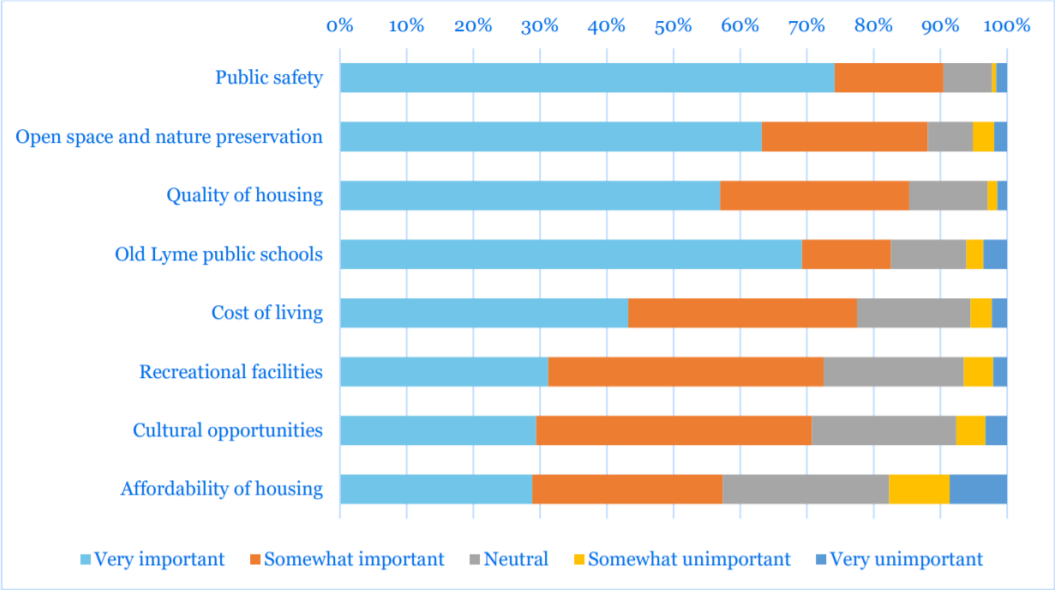
[31] Section II. Land Protection Challenges
Comprehensive Open Space Acquisition Strategy
2016-2020 Green Plan, DEEP

[32] Business and Resident Survey
AdvanceCT, March 2020

[33] Old Lyme Economic Development Study
AdvanceCT, May 2020

In another finding from its survey, AdvanceCT found that businesses and residents typically rated open space and nature preservation as either very or somewhat important. [34]

Figure 7: Importance of Quality of Life Factors in Old Lyme



Connecticut ranked #21 on the U.S. News & World Report 2019 "Best States" rankings. Our state's "natural environment" was ranked 6th among all states, contributing to that ranking.

One important caveat: It is important to note that the **COVID-19** public health emergency has changed economic data trends. Connecticut, with the rest of the country, has experienced a sharp spike in unemployment and the pandemic has caused economic hardship for many.

At the same time, there is informal discussion of a possible exodus from urban centers that, in conjunction with "work-at-home" trends, may affect smaller communities.

An area realtor was quoted in May 2020 as seeing "a dramatic increase in out-of-state people looking for houses. … We think people are trying to leave the City. It's the same phenomenon we saw post 9/11. People are worried about being in Manhattan."[35]

[34] Business and Resident Survey
AdvanceCT, March 2020

[35] Real Estate Market Rebounds Sharply in Lower Connecticut River Valley
Connecticut Examiner, May 7, 2020

A Harris poll reported that nearly a third of Americans are considering moving to less densely populated areas in the wake of the pandemic. That may foreshadow a shift that would have a major impact on residential real estate sales and home prices.[36]

Hearst Media Connecticut reported since March, when the COVID-19 pandemic surged, United States Postal Service data shows nearly 10,000 New York residents have changed their addresses in favor of Connecticut ZIP codes. That's an increase from about 1,200 requests over the same period in 2019.[37]

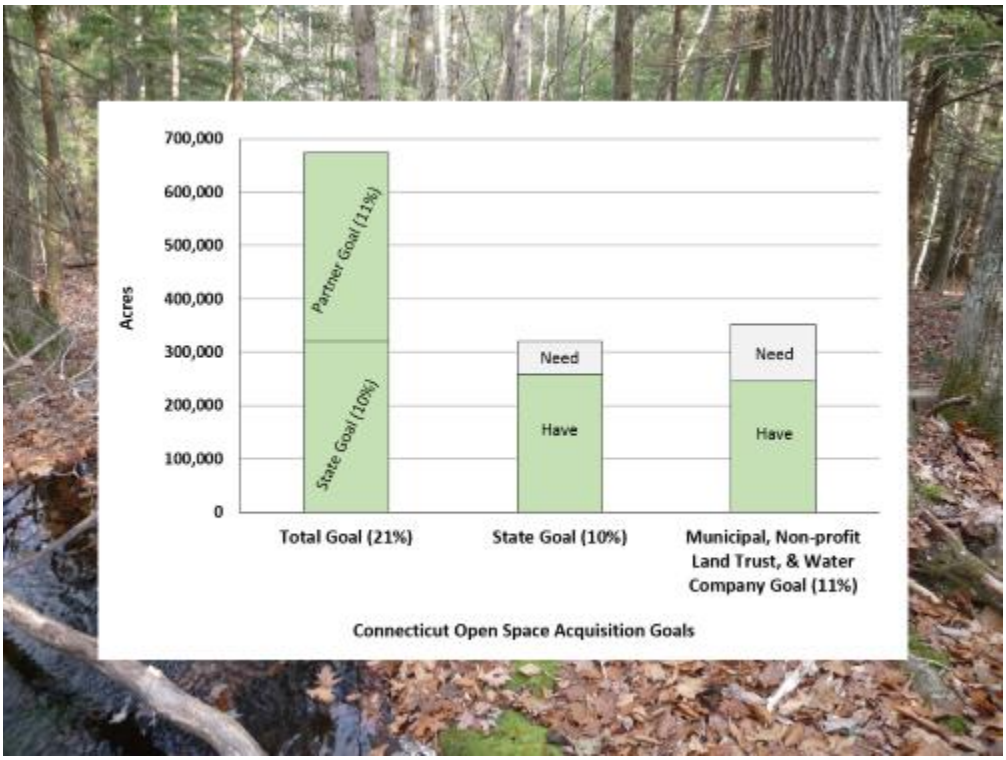
[36] Get me out of here! Americans flee crowded cities amid COVID-19, consider permanent moves USA Today, May 1, 2020

[37] USPS: Nearly 10K New Yorkers change address to CT at height of coronavirus New Haven Register, June 19, 2020, Updated: June 20, 2020

Protected Land - Where Are We?

The State's **Green Plan** has set a goal of conserving 21% of Connecticut's land base as open space by year 2023, as set forth by section 23-8 of the Connecticut General Statutes.[38]

Of that goal, the State of Connecticut would hold 10% of the land base, or 320,576 acres. Land conservation partners, including towns, non-profit land conservation organizations and water companies, would hold 11%, or 352,634 acres.



As of June 30, 2019, DEEP estimated that 508,718 acres, or 75.5% of the total open space goal, has been protected by the Department and its land conservation partners. DEEP and its partners need to acquire or protect an additional 60,392 state acres and 104,100 local acres of open space, respectively, to reach this goal.

[38] 2016-2020 Green Plan
Executive Summary, DEEP

The Old Lyme Land Trust ("OLLT") completed an analysis of conserved land in town, which it published in its August, 2018 "Tributaries." The OLLT graciously allowed the Old Lyme Open Space Commission to quote that study in this plan.

Per that analysis, the total acreage in Old Lyme, excluding ocean waters, is estimated at about 16,500 acres (the number ranges from 15,000 to 18,000, depending upon the exact definition used).

For the purposes of the OLLT calculations, the following was considered open space:

- Property held by the OLLT
- Open Space and other protected parcels held by the Town of Old Lyme ("the Town")
- Land owned by the State of Connecticut
- U.S. Fish and Wildlife Service (USFWS) properties, and
- Parcels with conservation restriction easements or land otherwise held by The Nature Conservancy (TNC).

Golf courses, athletic fields, and other active recreational areas were excluded from the open space totals.

The **OLLT** owns nearly 1,130 acres of land in town. In addition, the Trust holds easements on some 40 acres. About 800 acres of this land are open to the public in the form of 12 nature preserves. The remainder is largely inaccessible marshland and smaller upland parcels.

The **Town of Old Lyme** owns 936 acres of open space land in six sizable open space areas accessible for hiking and public access, and two other areas. They are:

Open Space	Size
Ames Family	220 acres
Bartholomew	105 acres
Champlain Farm North	65 acres
Champlain Farm South	204 acres
McCulloch Family	312 acres
Upper Three Mile River	30 acres

In addition, open space includes:

- A 5-acre parcel called **Lords Wood B** provides hiking trail access to the Lay Property owned by The Old Lyme Land Trust.
- The 8-acre **Eklund Pond** open space that protects a habitat for birds and other wildlife does not have hiking trails.

As a provision of the town's 2019 purchase of the McCulloch Family Open Space, two 3-acre building envelopes off Flat Rock Hill Road were purchased. If these areas are developed as affordable housing within five years, those monies will be returned to the town open space acquisition fund. If they are not developed as affordable housing, 6 acres will be added to the McCulloch Family Open Space, increasing the town's open space.

The town also owns about 46 acres at Cross Lane that protect a valuable water source, bringing the protected land total of these properties to roughly 995 acres.

NOTE: This total does **not** include various parcels of town open space owned by fee within subdivisions. When added, that land will increase the above town total.

The **State of Connecticut** owns approximately 662 acres in Old Lyme. This includes the 103-acre McCurdy-Salisbury forest parcel on Town Woods Road, 12 acres near the Black Hall river given to the state via a 2019 bequest by Diana Atwood Johnson, and saltwater marshland.

The State also owns the 400-acre National Guard Stone Ranch military reservation. Though heavily forested, the land is not open to the public, nor is it dedicated to habitat protection or climate change mitigation. It is therefore not included as open space in this analysis.

USFWS owns a 56 acre parcel on the upper Lieutenant River that formerly belonged to noted ornithologist Roger Tory Peterson.

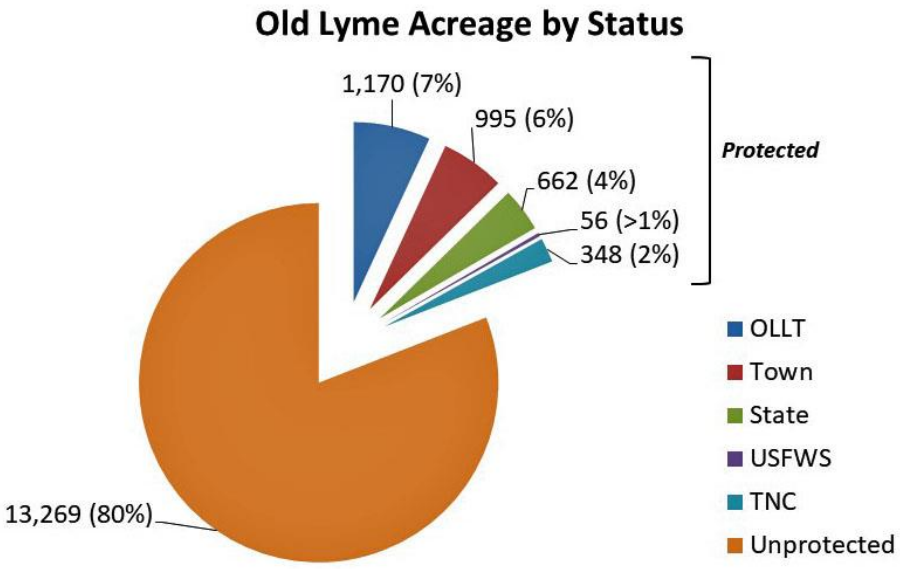
> In 1997, the entire Connecticut River watershed was designated as the Silvio O. Conte National Fish and Wildlife Refuge. Comprised of 7.2 million acres within the states of Connecticut, New Hampshire, Vermont, and Massachusetts, the Conte Refuge is the nation's only refuge of its kind to encompass an entire watershed.
>
> Conte Refuge land in Connecticut currently includes the 56-acre Roger Tory Peterson Unit in Old Lyme mentioned above.

The Nature Conservancy (TNC) holds conservation restriction easements on nearly 630 acres, and has about 30 acres of fee-owned land. The McCulloch Family Open Space is protected by a Nature Conservancy easement, and that acreage is not reflected in TNC summary totals to avoid double counting.

As shown in the following graph, updated to June 2020, all the various protected holdings constitute approximately 20% of the total land acreage in Old Lyme. This total is close to the Green Plan's goal of conserving 21% of Connecticut's land by 2023.

The Old Lyme Land Trust, the Town of Old Lyme and The Nature Conservancy together protect about 15% of the town acreage, exceeding the 11% Green Plan goal for the State's land conservation partners.

That said, Old Lyme is nearer the Green Plan's 21% goal than indicated. Research conducted pursuant to the next plan section will boost the total protected land in town. (Various parcels of town open space owned by fee within subdivisions are not included within the Town's total conserved acreage).



Certain assumptions were required for the above assessment. OLLT and the Open Space Commission welcome any additional insights into open space acreage in Old Lyme that would refine the calculations.

Conservation Easements and Open Space

The Town of Old Lyme regularly receives open space and conservation easements on parcels of lands through the process of development and subdivision.

Article V, § 219-42, of the town's subdivision regulations, states "Land for parks, playgrounds, recreation areas and **open spaces** shall be provided and reserved in each subdivision."

"In determining the need for reservation of open space, the [Planning] Commission shall be guided by, but not limited to, a standard of 15% of the land area of the subdivision and a minimum reservation area of one acre."

This 15% open space requirement may be met in a variety of ways:

- Land is deeded to the Town of Old Lyme, i.e., the town owns the land in "fee."
- Land may be held in corporate ownership by owners of lots within a subdivision. Open space may be conveyed by warranty deed to a homeowners' association. Membership in such corporation shall be mandatory for all lot owners within the subdivision. Each deed states that such open land is reserved for use as open space in perpetuity.
- A permanent easement is obtained by the town, or nonprofit organization, stipulating that the owner transfers development rights to and open space easements over the land.

The Old Lyme Open Space Commission, per town ordinance § 20-56, is charged with "advising land use boards and commissions concerning applications that require the setting aside of open space as part of their approval process." The Commission seeks to fulfill this responsibility in a cooperative and construction relationship with the town Planning Commission.

The Open Space Commission is further charged via that ordinance to work with land use boards, commissions, and departments to monitor and enforce conservation easements.

As DEEP's Green Plan[39] states, partially paraphrased:

> Illegal encroachments are a significant and costly stewardship challenge to protected open space. Encroachments, or conducting an activity on another party's land that damages or alters the land, vegetation, or other features, includes but are not limited

[39] 2016-2020 Green Plan
D. Stewardship of Protected Lands. pg 61
Connecticut DEEP

to: removing boundary markers; erecting buildings or other structures; building roads, driveways, or trails; dismantling stone walls; cutting vegetation; installing lawns or utilities; use of unauthorized or unpermitted motorized or all-terrain vehicles; or using, storing, or depositing vehicles, material, or debris.

Efforts should be made to resolve identified encroachment in a timely and effective manner.

The Open Space Commission in July, 2019 amended its "Conservation Easement/Open Space Monitoring and Enforcement Policy."

The goal of this policy is to encourage proper stewardship of protected lands; to maintain good relations with the fee owners of the land on which it holds easements and abutting property owners of Town owned Open Space; and to avoid potential easement violations or encroachments.

The following monitoring plan was set forth:

Open Space Owned in Fee

- Town, through its Open Space Commission, is to visit each property every three years.
- Town, through its Open Space Commission, is to update or renew stewardship plan.

Conservation Easements in favor of the Town of Old Lyme

- Town, through its Open Space Commission will regularly visit Conservation Easement properties with easement donor or current property owner in attendance, preceded by a letter and telephone call.
- Once the initial visit has taken place, the Open Space Commission will regularly revisit the easement property every three years.
- A copy of the conservation easement file will be brought on each visit (such file to include easement documents maps and records of previous visits.)

Records regarding existing conservation easements in town have never been compiled into an accessible database. The Open Space Commission has begun research into land records to establish the latter, including:

- Subdivision open space owned in fee by the town
- Conservation Easements in favor of the Town of Old Lyme.
- Open Space owned by Homeowners' Associations

PA 490: Open Space, Forest and Farm Land

An *act concerning the taxation and preservation of open space, forest and farm land*, commonly referred to as "PA 490" was enacted by the Connecticut General Assembly in 1963.

This legislation enables landowners to pay taxes on their PA 490 land at its current use value, rather than its highest value, via an approved application to their town's assessor.[40]

The terms "farmland and forest land" are often generally referred to as "open space," but in the context of PA 490, they are distinct land use value classifications.

Explicit criteria exist to determine whether land qualifies as PA 490 farm or forest land, such as the requirement for a "qualified forester's report." Similarly, specific criteria exist to determine such lands' "current use value," such as the quality of tillable soil or stumpage value. Interested persons may refer to the Connecticut Farm Bureau Association's website for more information.

Unlike many tax statutes, PA 490 includes a definition of "open space land," as shown in the chart below.[41]

Under PA 490 Sec. 12-107b (3) reads: *The term "open space land" means any area of land, including forest land, land designated as wetland under section 22a-30 and not excluding farmland, the preservation or restriction of the use of which would*

(a) Maintain and enhance the conservation of natural or scenic resources

(b) Protect natural streams or water supply

(c) Promote conservation of soils, wetlands, beaches or tidal marshes

(d) Enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open spaces

(e) Enhance public recreation opportunities

(f) Preserve historic sites, or

(g) Promote orderly urban or suburban development;[42]

[40] "Connecticut's Land Use Value Assessment Law - Public Act 490"
The Connecticut Farm Bureau Association, Inc.

[41] Connecticut's Current-Use Tax Law for Farmland, Forest Land, Open Space and Maritime Heritage Land
Connecticut Farm Bureau Association, Inc., 2015

An amendment to Old Lyme Plan of Conservation and Development in 1977 designated all land in Old Lyme not presently built upon as "Open Space" land making it potentially eligible for a PA 490 designation.

Property owners interested in claiming land as farm, forest or open space file an application with the Town of Old Lyme Assessor.

It is important to note that PA 490 does ***not*** **provide permanent protection** for open space, farm or forest land. An owner can sell such land.

In 1971, the General Assembly initiated a penalty associated with the removal of land from PA 490 classification to further encourage preservation and deter speculation.

Owners are subject to a tax of ten percent if such land is sold, transferred or its use changed in the first year of classification, and this tax decreases one percent per year each year until a ten-year period is reached. After ten years, there is no conveyance tax. The date for which the conveyance tax begins is different for open space than for farm or forest land. There are also conveyance tax exceptions.

A further note is important: PA 490 open space or other land is generally not open to the public.

According to the Town of Old Lyme's Annual Municipal Report to the State Forester, the following PA 490 was classified in town in 2018:

	# Parcels	Acres
Open Space Land	281	1,744.05
Forest Land	41	1812.43
Farm Land	37	345.58
	359	3902.06

Open Space Goals

- Seek open space acquisitions and land donations that meet various criteria as outlined in "Land Appropriate for Acquisition as Open Space" (see following section).

- Create wildlife sanctuaries on certain properties. Such lands would remain largely undisturbed by humans with a goal of providing a permanent habitat for native and endangered wildlife and flora. Conserve areas important to local and migrating species, such as vernal pools, wetlands, aquifers, and old growth forest. Explore the suitability of "forever wild easements."

- Carefully shepherd the town's open space acquisition fund to ensure "opportunity" reserves are available for appraisals, land surveys and purchases if the town needs to act quickly when land desirable for open space becomes available for sale.

- Consider additional funding sources for open space acquisitions, as may be needed or available, including municipal bonding, federal and state grants, private grants and donations/gift contributions. The town's land fund contribution was established in 1998, and the annual contribution of $75,000 has never been adjusted for inflation. That level of support, established over 20 years ago, is equal to about $47,000 in today's dollars. Investigate opportunities to use grants or aid to assist in land stewardship, such as the construction of bridges, improving accessibility, and other stewardship goals.

- Ensure all town-owned open space, through deeds or conservation easements, is protected in perpetuity.

- A State of Connecticut policy is also appropriate for Old Lyme -- limit improvements to permanently protected open space areas to those that are consistent with the long-term preservation and appropriate public enjoyment of the land and which are consistent with open space goals.[43]

- Place a high priority on safety.
    - Maintain a safe and accessible trail system for open space properties, including active monitoring and maintenance of trails, posting of helpful signs and distribution of open space maps.

[43] Conservation & Development Policies: The Plan for Connecticut
Office of Policy and Management, June 5, 2013

- Use technology to foster safe and enjoyable use of open space lands, such as the posting of QR codes on kiosks to allow map downloads.
- Promulgate rules for proper and unsuitable open space access.
- Seek engineering advice on potential traffic issues that may be associated with access into and egress from any future parking areas.
- Strongly stress the safe use of open space per requirements and/or recommendations of government officials and health experts regarding COVID-19 or a future health crisis.
- Post warnings on hazards, as they may occur, e.g., regarding the danger of coyote/pet and hiker interactions during breeding season, mosquito transmission of Eastern Equine Encephalitis and other dangers.

- Work cooperatively with emergency responders for the safety and speedy rescue, if needed, of the public using open space. Update, as needed, the joint Open Space/Land Trust Emergency Responders Book. Communicate that cell coverage is good on all open space lands, hikers should carry phones and call 911 in the event of emergencies.

- Maintain active communication and coordination with Town of Old Lyme land use departments and commissions concerning open space in Old Lyme. Advise land use boards and commissions concerning applications that require the setting aside of open space as part of the town's approval process. At the same time, work closely with the Old Lyme Land Trust and other non-government organizations to achieve conservation goals.

- Conduct a publicly visible, systematic monitoring and enforcement program for town owned open space and land under conservation easements where the town has been named as the beneficiary to avoid potential violations or encroachments. Work cooperatively with landowners for properties' protection.

- Clarify and strengthen the Open Space Commission's ability to protect conserved land in Old Lyme through a review and amendment, if needed, of town ordinances.

- Promote the financial advantages and personal satisfaction Old Lyme residents can experience by making donations of land, by entering into conservation easements or use of other means to permanently preserve their land.

- Encourage owners of land with approved open space or forest PA 490 designations to make the protection of their land permanent.

- Encourage open space use by all:

- Encourage passive recreation on open space land, such as hiking, bird watching, nature study, plein air painting, or simply quiet observation or contemplation.
- Provide information on the environment and ecology of open space to enhance visitors' enjoyment of the land.
- Develop and locate educational kiosks or other media so the public may view beaver ponds, e.g., with adjacent information "on site" about their activity.
- Partner with local organizations, such as arts organizations, nature and conservancy organizations and others to provide programming or activities on open space land. Make provisions to accommodate group use of certain open space areas, such as providing composting sanitation facilities.
- Access to open space shall remain free to all. (Partner organizations may charge fees to recoup their costs but should clearly communicate that such fees are not assessed by or received by the town).
- Involve youth in activities to learn about nature within open space lands. Explore ways to partner with the LOL school system and other school systems to use open space as an educational "classroom."
- Communicate that diverse populations are always welcome in open space. Explore how educational programs may introduce nature and ecology to those whose backgrounds have not offered an opportunity to spend time in natural settings.
- Continue a year-round public information program related to open space and related issues.
- Maintain and build the town open space commission website with educational and informative pages.

- Develop and encourage open space access for individuals with disabilities and for populations unable to traverse physically challenging trails.

- Recruit participation in the town's open space program. Seek volunteer support for stewardship and other activities. Involve youth in open space and nature conservation activities, so they may assume future stewardship of the town's natural heritage. Encourage family use of open space.

- Recognize and provide information on the historical use of open space lands by Native Americans. Work with historical preservation experts, such as the State Archaeologist, to determine the sensitivity of open space areas, i.e., the presence of artifacts, ancient living sites or burials areas, before disturbing lands.

- Work with State and Federal agencies, educational institutions, conservation organizations and land trusts on conservation and open space land stewardship and management issues. Commission members and any contracted staff should attend select workshops, seminars

and conferences to build technical knowledge on how to best preserve and manage open space in Old Lyme.

- Develop a land/forest management plan for open space properties. Establish an ad-hoc committee to address Open Space property ecology top-down with consideration given to safe invasive control methods including but not limited to biological controls and pond water management (tidal flow restoration).

- Establish and maintain a central, permanent Open Space Commission file system for land records; conservation easements and open space land monitoring; correspondence; business documents; and other material.

  Note: At present, paper and electronic documents are stored haphazardly, making document sharing among Open Space Commission members, town departments and other commissions difficult; subjecting files to potential loss or neglect; and possibly delaying their production for Freedom of Information or other requests if a file holder is not reachable.

Land Appropriate for Acquisition as Open Space

The Open Space Commission is charged, via § 20-56 of the town ordinances, with

- Developing, updating and maintaining a list of parcels which may be appropriate for acquisition as open space.
- Identifying and recommending to the Board of Selectman parcels of land which may be appropriate for open space acquisition, or interest or easements in such parcels.

The Open Space Plan does not identify specific parcels of land that may be desirable acquisitions. The reason is that such identification may adversely affect negotiation and price for the acquisitions, affect the marketability of properties, or otherwise impair the town's negotiation position. The Open Space Commission is cognizant of the requirements of Connecticut's Freedom of Information Act ("FOIA") and will generally weigh price negotiations and contract material terms for specific properties in executive session as permitted by the FOIA.

In consideration of this plan, the Town Plan of Conservation and Development, and the Connecticut Green Plan, the Open Space Commission lists the following criteria to be considered in recommending land for future acquisition. Properties that meet multiple criteria are more likely to be recommended to the Board of Selectmen for acquisition.

Connectivity

Property adjacent to or in close proximity to existing town open space properties; to Old Lyme Land Trust preserves; or to State of Connecticut conserved land that will meet this plan's goal of building large, unfragmented greenways and forest blocks and advance the goal of a town-wide trail system.

Resilience

Parcels that provide refuge to wildlife fauna and flora; serve as natural strongholds in the event of drought, flood and other disturbances; and that can facilitate adaptation by both wildlife and humans, are said to be "resilient." Resilient property can particularly help mitigate climate change. Components of resilient land include complexity/geodiversity and connectivity.

Wildlife

Associated with resilience, property that protects wildlife, with special emphasis on habitat that supports endangered or threatened species as identified in the State of Connecticut's Wildlife Action Plan.

Water

Property that protects surface and sub-surface natural and drinking water, including wetlands, sources of and rivers and streams, ponds, vernal pools, aquifers and drainage systems. The Green Plan gives priority to the acquisition of lands that protect high-quality natural waters and drinking water resources.

Article V, § 219-42, of the town's subdivision regulations explicitly mentions open space needs such as "preservation of natural resources such as, but not limited to, unusual topography, **wetlands**, **aquifers**, agricultural land, wildlife habitat, visual corridors and vistas."

Recreation

Property that offers opportunities for active and passive outdoor recreation and education.

Coast

Property that is important for coastal preservation and/or provides access to the shoreline and tidal waters for canoeing, kayaking, fishing, crabbing and other water related activities.

Scenic/Special Features

Property with unique and significant features such as vistas, or visual corridors to provide the same, ridgeline conservation, caves, steep slopes or other unusual or rare topography should be considered for preservation.

Heritage

Property that offers historical or archeological significance that also meets important open space acquisition criteria. Prior to any property construction, such as installation of parking areas, determine if an archaeological assessment is required and, if so, complete same.

Funding

Land eligible for state grants or other non-municipal funding according to grantor guidelines *and* that also meets important open space acquisition criteria.

Sale Factors

Desirable land that is available at reasonable cost, as determined by appraisals, with title and ownership free of potentially adverse issues.

Expense

Land that will not subject the town to excessive maintenance or carrying costs, such as the costly repair or upkeep of an access road; the inspection, maintenance, replacement of existing structures such as dams; or other sizable expenses.