



Department of  
**ENERGY & ENVIRONMENTAL PROTECTION**

## **Comprehensive Open Space Acquisition Strategy**

*2016-2020 Green Plan*

*Section V. Purpose of, and Need for, Protected Open Space*

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## **V. Purpose of, and Need for, Protected Open Space**

This section briefly describes Connecticut’s critical natural resources and the co-benefits they provide to the environment and the public. Co-benefits, also known as ecosystem services, are the benefits provided to people as a result of intact and functional environmental systems, including, but not limited to air and water purification, plant and animal biodiversity, pollination services, scenic beauty, sense of place, and natural-resource based outdoor recreation and education.

Ultimately, quality public health and welfare cannot be maintained in an environment that does not provide these interconnected ecological, societal, and individual benefits. For example, during a rain storm water infiltrates the ground and becomes cleaned by spongy forest soils, which can then enter the public drinking water supply.

But as forest and natural ground cover is developed into hard, impermeable surfaces, storm water runs over the ground and causes local flooding and pollution to drain into the Long Island Sound. Continued efforts to protect these land cover types and other natural resources will ensure that they are kept healthy and abundant now and for the future.

### **A. Natural Heritage Resources**

Plant, fish and wildlife species are interconnected and create a biodiverse and resilient landscape capable of providing essential ecosystem services for people. The 2015 [Connecticut Wildlife Action Plan](#) provides detailed information on key habitat types, conservation guidelines, and strategies for the maintenance of species populations in the state, including the acquisition of certain lands for the protection of habitat. The sections that follow generally describe some of the state’s important or unique habitats having high value for conservation as open space.

## I. Freshwater and Inland Wetland Habitats

Connecticut has approximately 65,000 acres of lakes, ponds, and reservoirs and 5,830 miles of rivers and streams. About 450,000 forested and non-forested inland wetlands are also distributed across the state. These natural water resources provide essential habitat for a large diversity of invertebrates, fish, and other wildlife species such as mink and great blue herons. Many inland wetland types are rare or specialized habitats, providing the only areas in which certain amphibians breed or spend their entire life cycles.

The quality and safety of the state's [drinking water supplies](#) is dependent on functioning freshwater and wetland habitats. Intact wetlands, free-flowing water courses, and vegetated river corridor lands promote water infiltration and protect surface and underground water supplies from increased sedimentation and runoff pollution and contamination.

Freshwater and inland wetland habitats and their associated wildlife are interrelated, sensitive systems which are easily degraded or lost through land development. Over the last 20 years, Connecticut experienced a considerable amount of development on lands that were or next to freshwater resources. A study on statewide land cover changes in riparian corridors by the [Center for Land Use Education and Research](#) found that between 1985 and 2006, Connecticut gained 19,000 acres of developed land within a 300-foot zone



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Virginia Rails (top) and Painted Turtles (bottom) are two of many wildlife species that thrive in clean, intact wetlands.

adjacent to rivers and streams (Wilson and Chester 2011).

As development replaces natural ground cover in riparian zones, the area of impervious surfaces increase. Removal of vegetative cover from these areas causes cold waters to warm, thus rendering habitat unsuitable for native trout, aquatic insects, and other dependent wildlife species. Stream banks become unstable, soils harden, and therefore less rainfall is absorbed into the ground, which causes flooding. Storm water runoff frequently carries sediment and pollutants from paved areas into catch basins, drains, and ultimately the nearest watercourses.

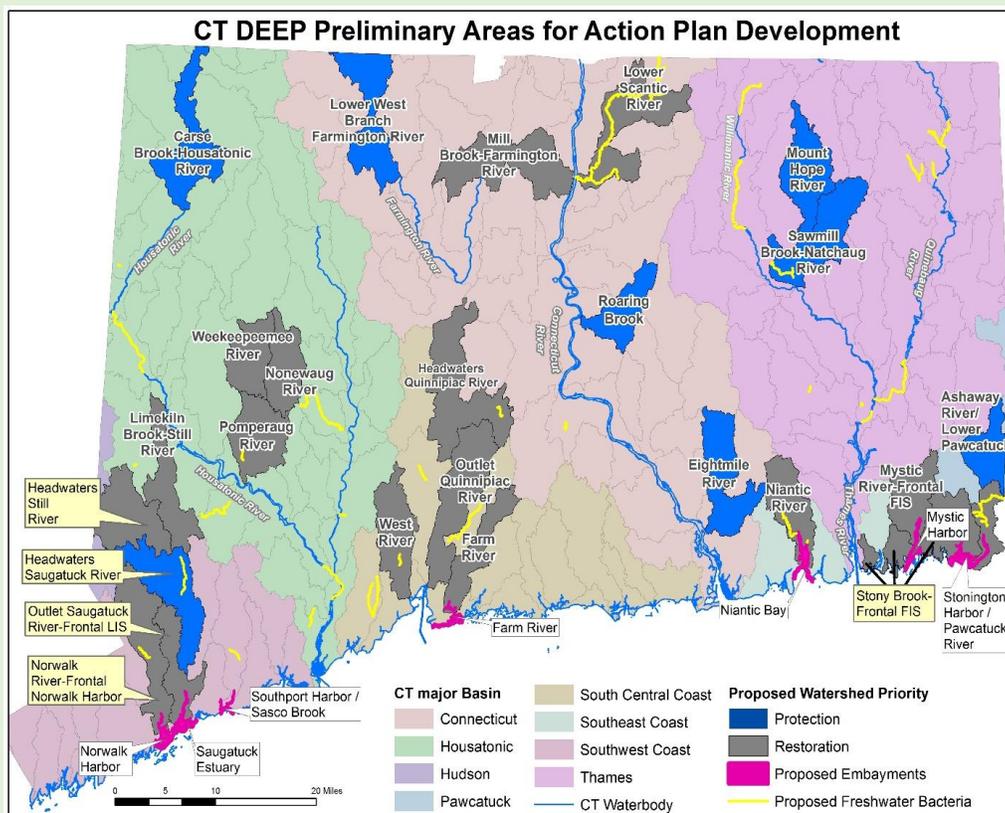
Land conservation can protect freshwater and wetland habitat quality and integrity. The acquisition of lands having high value for conserving freshwater habitat resources, such as forested lands adjacent to rivers, cold water streams, and lakes can serve to create buffers from impacts by water warming, surface runoff pollution, stream flow alterations, and other threats.

## Connecticut Key Lands for Conservation Achieving Water Quality through an Integrated Water Resource Management Approach

Surface waters, including rivers, lakes, and Long Island Sound, are important resources for residents, fish and wildlife. DEEP monitors waters for uses such as drinking and fishing, as well as the water quality needed to support these. Monitoring finds some waters which are impaired and need actions to restore their quality. Other waters have good water quality which needs to be maintained or protected.

DEEP is taking a new approach called [Integrated Water Resource Management \(IWRM\)](#) to restore and protect Connecticut's water resources. The approach allows DEEP to identify areas for action plan development based on state-specific concerns, evaluating waters based on ecological, social, and pollution information while considering partnerships and the ability to realize goals. Through a [detailed process](#), DEEP has identified a draft list of watersheds as candidates for developing plans for protection or restoration of water quality. Selected areas will be refined based on public comments and on consideration of resources available to support developing and implementing plans.

Land conservation serves as a powerful action to meet goals in watersheds which have been proposed by DEEP as candidates for water quality protection plans. The protection of undeveloped, natural land cover helps to buffer water quality from excess nutrients, stormwater runoff, and pollutants harmful to drinking water, water-based recreation, and aquatic species.

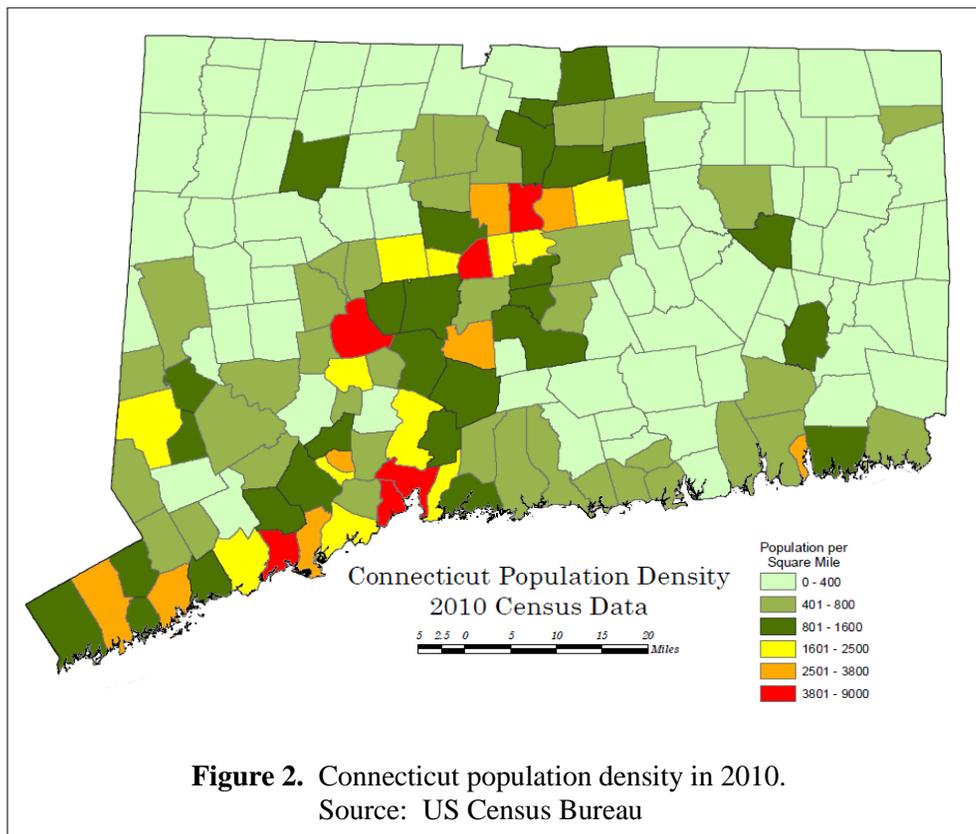


**Figure. 1. Proposed selected watersheds prioritized for action plan development.**  
Map assembled by DEEP Bureau of Water Protection and Land Reuse

## II. Coastal Habitats

Coastal habitats including beaches and dunes, tidal wetlands, and estuary embayments provide unique ecosystem benefits, such as feeding and breeding areas for dependent wildlife, water purification, and carbon storage by soil and vegetation. The Long Island Sound is the state's largest coastal natural resource, forming about 250 miles of Connecticut's shoreline and providing habitat to more than 1,300 species of wildlife while also providing recreational benefits to millions of people each year (LISS 2015).

Impacts by climate change and land development all pose difficult challenges to maintaining coastal habitat integrity and ability to function. The coastline hosts the most densely populated towns in Connecticut (Figure 2). To make way for this development and related road construction, impervious surfaces replaced coastal fields, coastal forests, and tidal wetlands, and resulted in the loss of ecosystem services and fish and wildlife species.



Pollution runoff from both developed lands along the shore and farther inland can lead to coastal habitat quality impairment. Storm water runoff, as well as nutrient runoff from wastewater treatment plants and agricultural fields, reach the Sound and frequently cause severe oxygen starved and contaminated conditions that inhibit fish, plants, and wildlife from thriving (LISS 2015).

Compounding issues of pollution, climate change is visibly and measurably impacting the state's coastal resources. Long Island Sound's waters are warming and causing fish and other species communities to shift. These shifts can disturb the overall marine ecosystem and discourage the public from enjoying saltwater fishing and shell fishing opportunities.

Sea-level rise caused by climate change will submerge and affect coastal habitats. Marsh drowning, whereby tidal marshes become flooded more frequently, is a critical threat to the long-term survival of many tidal marsh species. For example, Connecticut's tidal marshes are home to half of the world's only breeding population of saltmarsh sparrows. Because they nest in tidal marsh grasses, tide height and flooding frequency are important drivers of breeding success for these sparrows (Bayard and Elphick 2011; Gjerdrum et al. 2008).

The strategic acquisition and conservation of lands having important natural coastal resources keeps these resources safe, clean, functional, and available for future generations. For instance, 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.

### **Connecticut Key Lands for Conservation** **Tidal Marsh Conservation Planning using Sea-level Rise Models**

Salt marshes provide a variety of ecosystem benefits, including buffering developed upland areas from storm surges, storing carbon, filtering pollutants to improve water quality, trapping sediments, and providing habitat for fish, invertebrates, and birds. Despite initiatives over the last 40 years to protect tidal marshes from pollution, dredging, and filling, marsh loss around Long Island Sound has continued. One reason may be the inability of marshes to accumulate sediment and organic matter at a pace equal to sea-level rise (SLR), resulting in marshes that become wetter, erode, and “drown” or transition to unvegetated mudflats or open water.

To learn more and help communities plan for the future of their salt marshes, the potential effect of SLR on Connecticut's tidal marshes was evaluated by applying the Long Island Sound Study's Sea Level Affecting Marsh Model (SLAMM) to Connecticut's coast. SLAMM is a two-dimensional model in which long-term shoreline and habitat class changes are predicted as a function of land elevation, tide range, and sea level rise.

Using four potential SLR scenarios, the model predicts areas that marshes are likely to move or migrate to, changes in total marsh area, and change in habitat types (e.g., high marsh to low marsh) over several time steps from year 2025 to 2100. Predictions of tidal marsh change can also be expressed in terms of likeliness to occur using a combination of SLR rates and other environmental variables used by SLAMM.

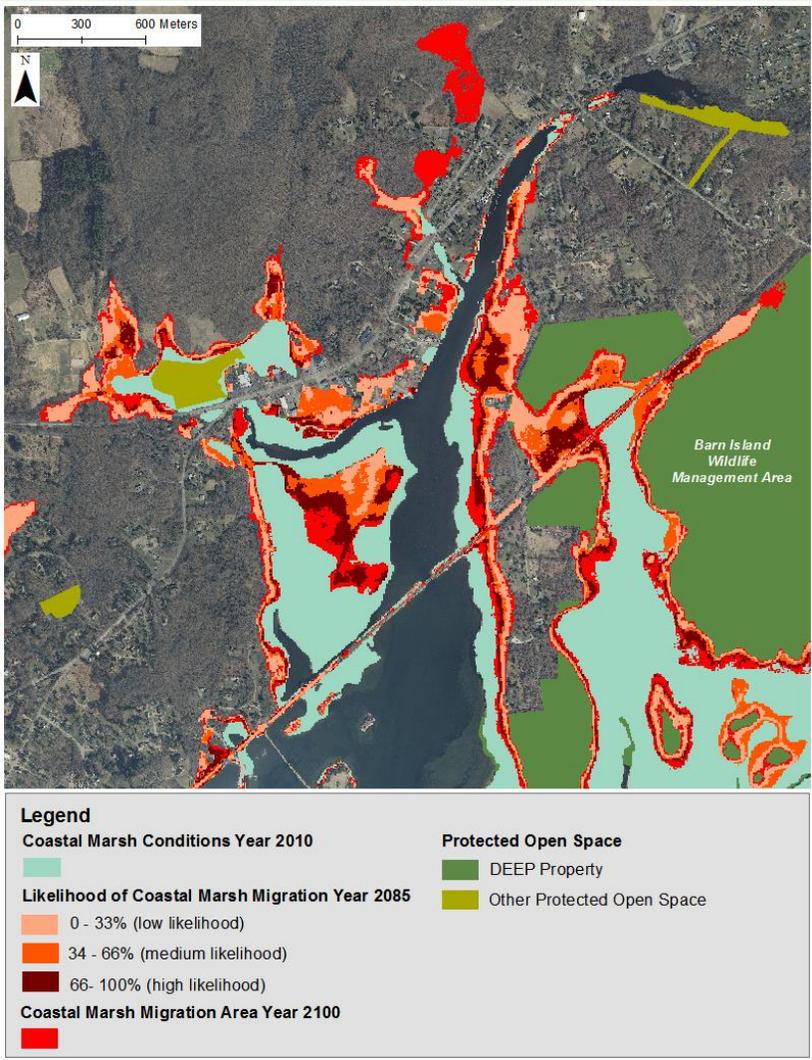
Tidal marsh change projections can help coastal communities identify priority marsh migration conservation areas. By identifying areas predicted to become tidal marsh in the future, DEEP and its conservation partners can target to acquire or protect such areas now. To see how tidal marshes change in a community, the LIS SLAMM Viewer's Basic and All Data versions are available now at [www.longislandsoundstudy.net/slamm](http://www.longislandsoundstudy.net/slamm)

More advanced geographic information system users can customize their maps for enhanced marsh migration conservation planning purposes by combining existing protected open space, parcel, and SLAMM data layers (Figure 3). Contact DEEP's Office of Long Island Sound Programs, [Coastal Management Division](#) for updates on SLAMM and links to downloadable data layers.

**Figure 3.**

Areas within and nearby the Barn Island Wildlife Management Area in Stonington, Connecticut that marshes are predicted by the Sea Level Affecting Marsh Model (SLAMM) to move or migrate to, shown over time steps in year 2085 and 2100. Predictions of tidal marsh change in year 2085 are expressed in terms of likelihood to occur.

Sources: Long Island Sound Study Sea Level Affecting Marsh Model and DEEP Protected Open Space Mapping data layers.



### III. Forested Upland Habitats

Upland forest is the predominant land cover type in Connecticut with deciduous, coniferous, and forested wetland habitat communities covering 59 percent of the state. DEEP's 2015 [Forest Action Plan](#) (formerly known as the Forest Resource and Assessment Strategy)<sup>31</sup>, identifies key forest-related issues and priorities to support development of long-term state strategies that will conserve forests from loss or degradation, protect working forestland, and enhance public benefits from trees and forests.



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Large-scale and intact forests provide key habitat linkages for common and declining wildlife species, such as thrushes and owls, bobcats, numerous insects, and newts and salamanders. In addition, forests add immensely to the quality of life for the state's residents. The ecosystem benefits this system provides are seemingly endless – forests absorb rainwater and slow runoff, reduce flooding, filter pollutants from the air, water, and soil, regulate air and water temperatures, supply outdoor recreational opportunities, and more.

One of the greatest benefits provided by forests is their ability to sequester or store carbon. Carbon dioxide is a greenhouse gas that contributes to climate change. Trees and other forest vegetation take in carbon from the air and store it within their roots, stems, and leaves. Carbon is sequestered by soils and soil microbiota on the ground floor, as well. Carbon sequestration from the atmosphere by forests reduce the state's greenhouse gas emissions.

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<sup>31</sup> Submitted to the U.S. Department of Agriculture's Forest Service as a requirement for federal funding for land acquisition and other support.

Changes in temperature and precipitation patterns for the region as a result of climate change will shift the distributions of some forest tree species northward or upslope, increase the pest insect or disease outbreaks, and introduce new invasive species and/or intensify the impacts by existing invasive species (Wilkerson et al. 2013). Connecticut's forests are already experiencing such pest insect outbreaks, for example the recently-discovered [southern pine beetle](#). Each of these will not only alter the habitat types available to certain wildlife, but also affect sustainable timber practices conducted by the State and private landowners.



Land conservation today can help to preserve remaining blocks of forestland important to the state's residents and environment. A study on statewide forest fragmentation by the [Center for Land Use Education and Research](#) found that between 1985 and 2006, Connecticut lost 168,960 acres of core forest (forest that is at least 300 feet from a non-forested habitat type) to housing development or other uses (Wilson and Chester 2009). This significant loss or degradation of forestland over only 20 years must not be allowed to continue. If forest development continues at this pace, the landscape's ability to function will be dramatically reduced.

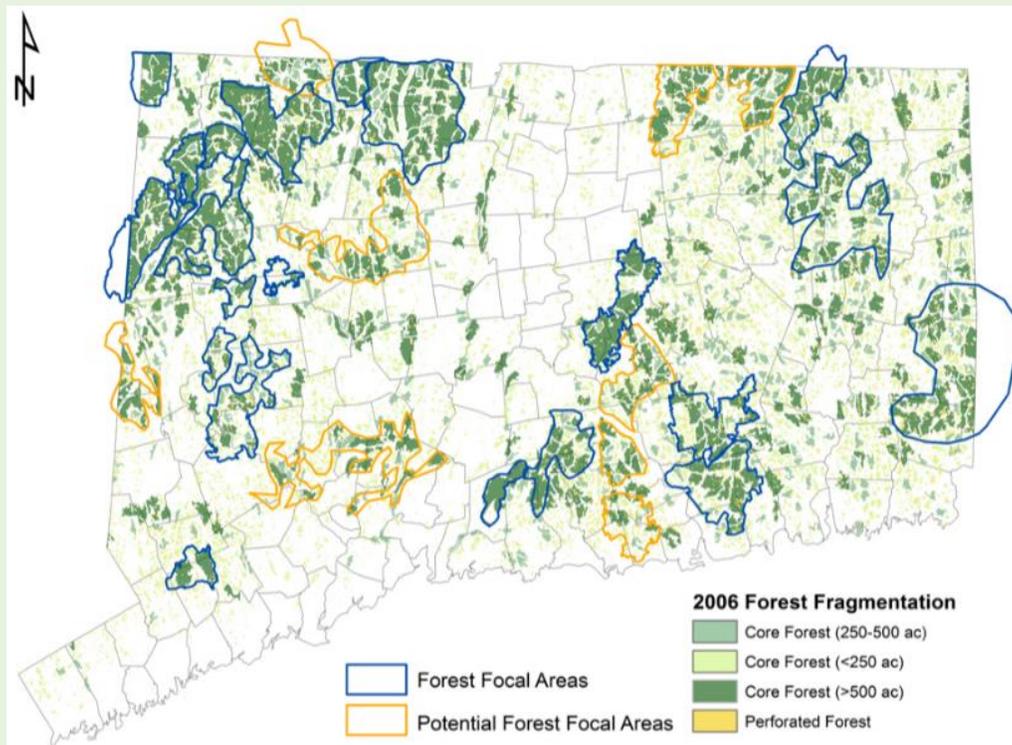
**Connecticut Key Lands for Conservation**  
**Core Forest Blocks Benefit Birds & Brook Trout**

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 and Forests and open space lands held by land conservation organizations. 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.

Birds are the most common wildlife group within forest communities. Forest birds depend on large tracts of connected forest for migration stopover sites and breeding habitat to raise their young. For example, wood thrush nest in large, deciduous forests with leafy understories. They are considered umbrella species that if are protected for, will indirectly protect many other bird, fish, and wildlife species that make up the forest community, as well.

Forest breeding bird populations are declining due to habitat loss and fragmentation as a result of land development. Development on or nearby cold water streams reduces vegetative cover and increases bank erosion, thus rendering habitat unsuitable for brook trout and other aquatic species. As Connecticut's only native trout species, wild brook trout are important to the state's recreational fishing season and overall fish biodiversity. They are dependent on cold, free-flowing streams, which are kept cool by trees and other vegetated cover along stream corridors.

To aid planners, several remaining core forest blocks have been identified by Audubon Connecticut as focal areas for the conservation of declining interior forest bird species (Figure 4). The acquisition of lands within these areas for open space will help birds and other species and help to buffer habitat from impacts caused by climate change, such as changes in stream water temperature and insect infestations.



**Figure 4.** Current and potential forest bird focal areas in Connecticut. Focal areas are concentrated where larger, intact forest tracts remain in the state. Map assembled by Audubon Connecticut.

#### IV. Ridgeline & Declining Upland Habitats

Upland grasslands and shrublands, sand barrens and sparsely vegetated sand or gravel, and traprock ridges, cliffs, and talus slopes are unique land covers in Connecticut that provide critical habitat for many rare or declining plants, insects, and animals. They also add highly valued scenic diversity to the state's mostly forested landscape.



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Early successional habitats such as warm and cool season grasslands, old fields, and shrublands provide an abundance of food, cover, and shelter for distinct assemblages of wildlife specifically adapted for these habitats, such as Eastern meadowlarks, prairie warblers, and New England cottontail rabbits.

Sand barrens occur in dry sandy areas such as outwash plains and ancient lake deltas, and have poor quality soils which create restrictive growing conditions for most vegetation types. One of the most important functions of sand barrens is their ability to support obligate moth and butterfly, tiger beetle, and other invertebrate species of greatest conservation need.

Early successional and sand barren habitats are among the most imperiled in the world due to habitat loss as a result of a combination of factors including land development or conversion to other uses, natural forest succession, and, in the case of man-made grasslands, intensified agricultural management practices (i.e., heavier grazing or more frequent mowing).



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Protecting these habitats necessitates acquiring the appropriate lands they exist or can exist on, fostering meaningful relationships with landowners who may help to manage for such lands, and ensuring adequate long-term management to maintain their early successional states. Without these measures, the rare species that depend on these habitats, and the viewsheds these lands afford, will disappear.

### **Connecticut Key Lands for Conservation**

#### **Early Successional Habitats Help Native New England Wildlife**

New England cottontails are Connecticut's only native rabbit species and depend on brush, shrubs, thickets, and young forest, generally known as early successional habitat, for food and shelter. The New England cottontail was once common throughout New England and eastern New York, but due to factors including habitat loss, fragmentation, and forest maturation, the range of this rabbit has declined significantly.

In 2006, New England cottontails were designated as a Candidate for Threatened or Endangered Status under the federal Endangered Species Act. To combat their population declines, the [Regional New England Cottontail Initiative](#) was established in 2011, of which DEEP is a partner agency. In Connecticut, this multi-state initiative established twelve core focal areas for New England cottontail conservation. Set within these areas is a goal of creating and/or managing between 19,000 and 24,000 acres of new or existing early successional habitat that could support the rabbit.

The acquisition and active management of lands located within a one-half mile radius of the 122 sites where New England cottontail habitat use has been documented in Connecticut can protect in the long term habitats necessary for these rabbits in our state (Figure 5). Conservation land acquisition and management actions by a wide range of partners including DEEP, other state and federal agencies, municipalities, non-profit organizations, and private landowners helped to keep the New England Cottontail from becoming federally declared as a threatened or endangered species in 2015.

This same habitat created or managed for the New England cottontail helps birds, reptiles, and many more wildlife species that also use early successional habitat during part or all of their life cycles. To help reverse significant population declines faced by the state's shrubland and grassland-nesting birds, Audubon Connecticut has identified broad focal areas where partners may direct land acquisition and management efforts to conserve such habitats should the opportunities arise (Figure 6). For instance, American Woodcock and Prairie Warbler focal areas are based around New England Cottontail restoration focal areas.

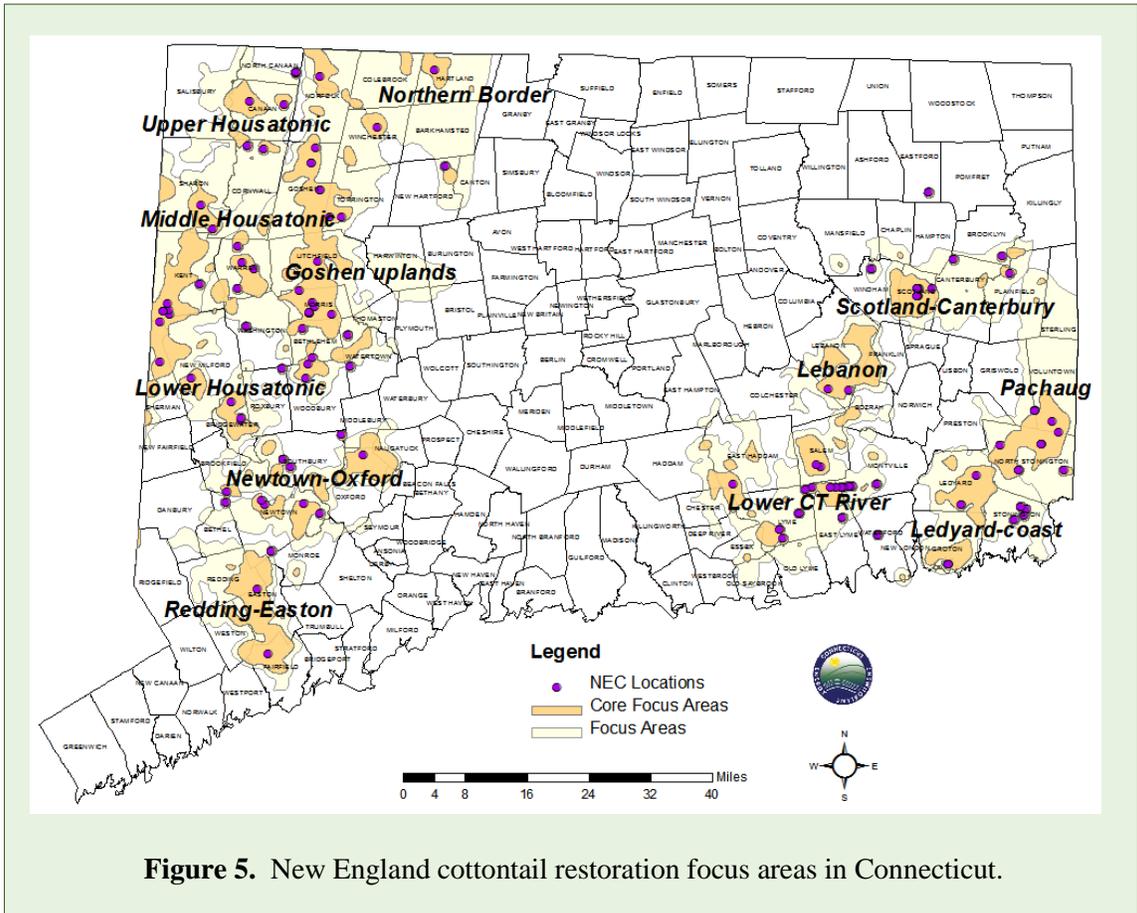
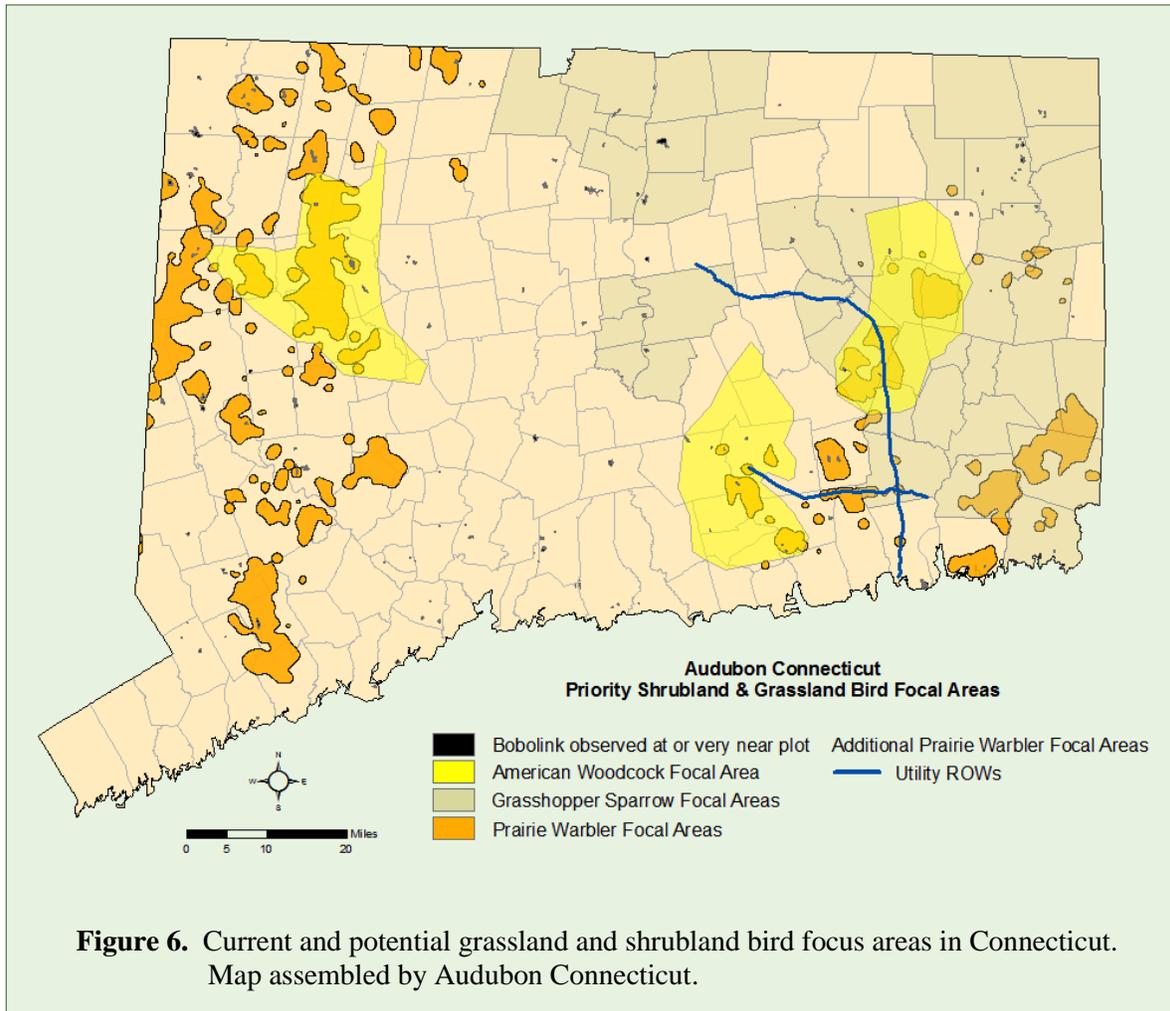


Figure 5. New England cottontail restoration focus areas in Connecticut.



Traprock ridgelines are special for their rust-colored cliffs, forested slopes, and rocky summits for their role in providing critical habitat, clean ground water, outdoor recreation, high aesthetic value, and intriguing natural history. Central Connecticut’s ridgelines were formed over a very long time. Two-hundred million years ago, volcanoes spread lava across the valley floor. The lava cooled into traprock and some of the layers cracked and tilted upward. Erosion washed away thousands of feet of softer brownstone layers, exposing the traprock as long ridge backs standing out above the landscape (DEEP n.d.; Lareau 1997).

Important species of greatest conservation need that depend on traprock ridges, cliffs, or talus slopes include peregrine falcons, timber rattlesnakes, falcate orangetip butterflies, and certain salamanders. Spring wild flowers such as red trillium and Dutchman’s breeches bloom on talus slopes for a short period in the springtime.



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Traprock ridgelines also contribute to the state’s quality of freshwater resources. Percolating rainwater filters through traprock and gets delivered to nearby wetlands, reservoirs, and lakes, and



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recharges groundwater aquifers. Where publicly allowed, these areas also provide hiking trails with varied scenery, vistas, and rock climbing, all considered some of the best in the state (CFPA 2006; Fasulo 2002).

Residential development along traprock ridges has been attractive since the 1990’s when available and developable land in the valley declined, the cost of land in the valley rose, and ridgeline views grew valuable. Because of their high elevation, ridgelines are also ideal site locations for communication towers and other structures. In some places, traprock is quarried by companies for gravel and rock. Development on ridgelines threatens to degrade water quality, rare wildlife habitat, scenic beauty, and existing or future hiking trails.

With the passage of Public Act Number [95-239](#), the State of Connecticut set a policy of protection for certain traprock ridges with the passage of the Ridgeline Protection Act. This act protects, albeit not in perpetuity, 44 traprock ridge segments in the state by enabling local

governments to enact zoning and conservation regulations to limit residential and commercial use on designated traprock ridges and setback areas.

## **B. Drinking Water Resources**

Connecticut's public drinking water resources include over 150 surface water reservoirs and 4,000 groundwater wells located in primarily urban and suburban areas and serve about 80 percent of the state's population. Of the more than 550,000 acres of watershed land in Connecticut, a third is owned collectively by water companies, the State, and municipalities, and water utility companies. Many water utility companies have been protecting and stewarding their lands for water quality since the late 19<sup>th</sup> and early 20<sup>th</sup> centuries.



Surface and underground water quality issues are a public health concern. Water contamination can occur from a variety of sources, including fuel spills and leaks, automotive discharges, pesticide and herbicide application, and fertilizers. Certain pollutants that do not degrade or dissipate readily underground threaten aquifer recharge areas and groundwaters. Drinking water sources located in areas with more land development and less land in water company ownership or protected open space are at higher risk of potential contamination.

Combined with land protection by others and laws administered by the Department of Public Health<sup>32</sup>, land conservation by water companies is an important aspect of strong watershed management for environmental integrity and safe drinking waters. Protecting lakes, rivers, floodplains, aquifer recharge areas, and forested habitat along such lands controls soil erosion and promotes water infiltration and buffers aquatic resources from runoff and non-point pollution, such as oil from parking lots and lawn fertilizers from neighborhoods.

### C. Outdoor Recreational Resources

Connecticut is rich with natural-resource based outdoor recreational activities. DEEP's system of Parks, Forests, Wildlife Management Areas, and water bodies provide a spectrum of recreational opportunities for residents and visitors, from bird watching to hiking, kayaking to hunting, and camping to horseback riding. The State also provides places along the shoreline to visit beaches, go saltwater fishing, and more. In addition to these, statewide trails, greenways, and blueways are used by thousands of walkers, bicyclists, and other users every day.



To extend such opportunities to as many as possible, accessible parking and picnic tables for individuals with disabilities are found at all State Park and Forest recreation areas, and many areas provide additional features such as accessible restrooms, camping, and fishing platforms.

<sup>32</sup> The use of land owned by water companies is overseen by the Department of Public Health through a statutory permitting requirement under CGS section 25-32(b), more commonly known as the Water Company Land laws.

The 2011 [Statewide Comprehensive Outdoor Recreation Plan \(SCORP\)](#)<sup>33</sup> quantified the supply and demand of public outdoor recreation areas and activities through a survey to citizens and all 169 municipalities in the state. The supply inventory showed that through its 110 boat launches, 107 State Parks, 32 State Forests, and 44 Wildlife Management Areas, DEEP provides the major share of the natural resource-based supply of outdoor recreation in Connecticut, including 71% of hunting activities, and 26-30% of boating access, camping, fishing, and water sports.

DEEP's Parks, Forests, Wildlife Management Areas, and water bodies are shown to provide significant sources of revenue and well-being for the state's communities. According to [a study by the University of Connecticut](#) on the economic impact of DEEP-managed lands, during 2010, State Forests and Parks hosted more than 8.5 million visitor-days, nearly half of which were at for-fee venues, and generated an estimated \$544 million through tourism activities within Connecticut (Gunther et al. 2011).



At least 2,100 lakes and ponds are available for public recreation and DEEP

stocks an estimated 1 million fish at 2,000 sites across the state, all of which also contribute to the state and local economies. In 2010, DEEP sold and issued 145,799 inland or all waters fishing permits, and anglers spent an estimated \$116 million on fishing expenses. During the

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<sup>33</sup> Submitted to the U.S. National Park Service as a requirement for federal funding for park land acquisition and facilities development, maintenance, or upgrade.

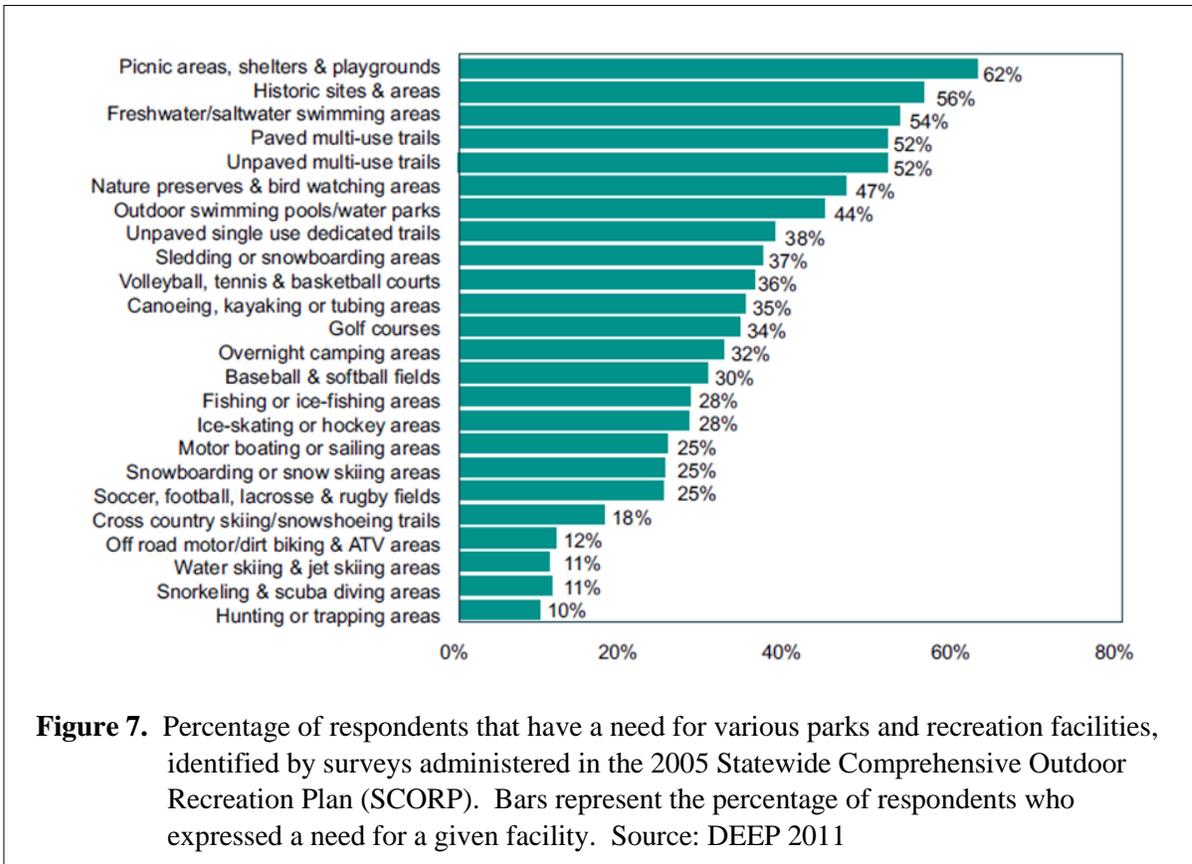
same period, both sportspersons and non-anglers spent an estimated \$36.8 million for recreational boating.

Even some who may not step foot onto DEEP land or participate in these activities indirectly benefit from being neighbors with the agency. According to the study by the University of Connecticut, single family home owners in the state were estimated to derive amenity values of \$270 million annually from overlooking DEEP-managed Parks, Forests and Wildlife Management Areas.

## **I. Outdoor Recreation Needs**

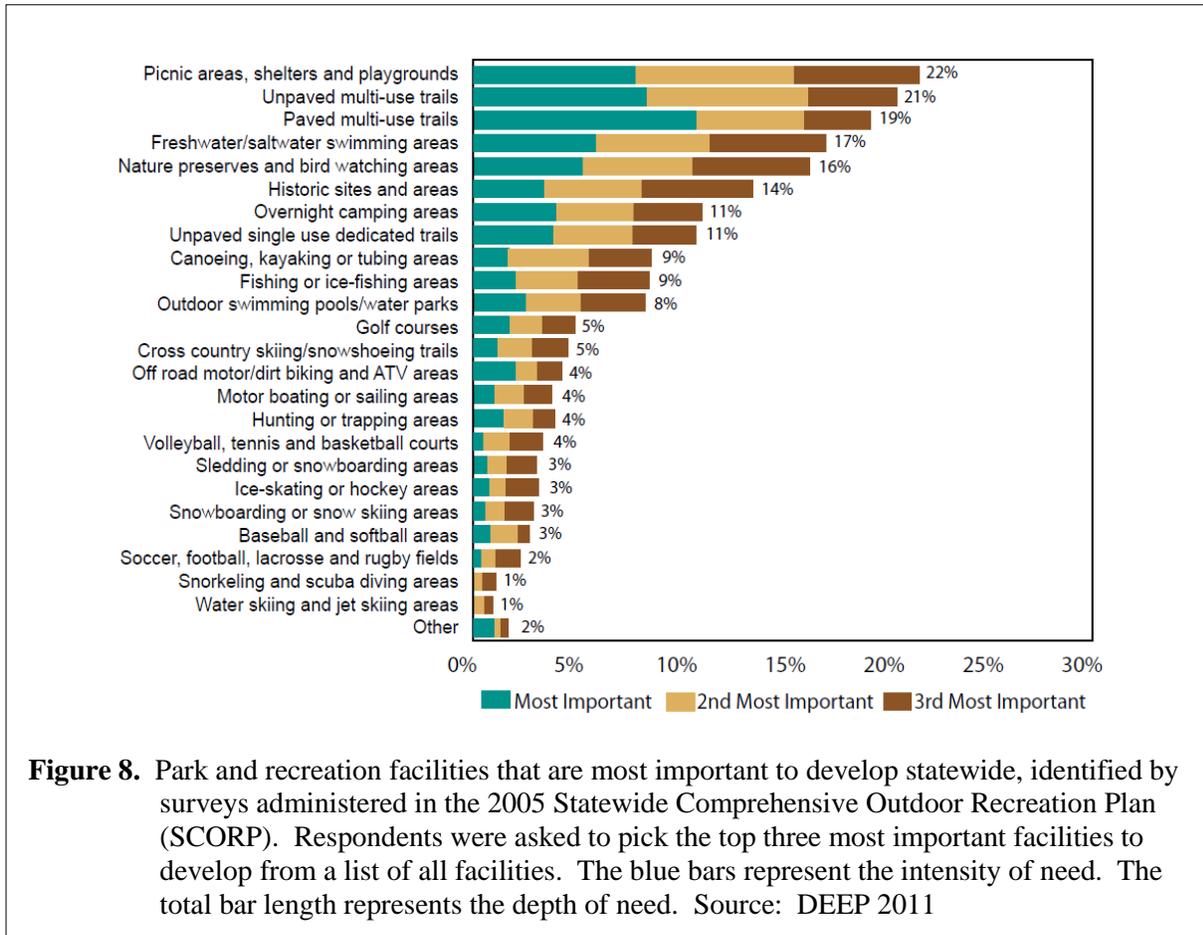
While DEEP offers a variety and abundance of places to enjoy nature, the Department seeks to enhance these experiences and ensure more equitable and plentiful opportunities to be outdoors. The SCORP and similar surveys conducted by DEEP's Office of Long Island Sound Programs found that unmet demands for certain activities, the small-sized and scattered nature of DEEP land holdings, and habitat loss to development pose some challenges for providing public outdoor recreation. Using the results of these surveys, DEEP set priorities aimed at supplying quality outdoor recreation experiences for all of Connecticut's residents.

For example, the acquisition of lands that serve to expand the state's major recreational trail systems and provide additional water access areas are Green Plan priorities. Of the natural resource-based activities DEEP has a mission to provide, respondents to the [2005 SCORP survey](#) expressed a need for, and rated important to develop or enhance, activities associated with water access areas, trails, and nature preserves (Figure 7 and 8). This trend appeared again in the updated SCORP survey in 2011.



In particular, providing public coastal access areas is a high priority of the Green Plan. Coastal State-managed recreation areas are some of Connecticut’s most visited, providing access to Long Island Sound for swimming, boating, fishing, clamming, and other activities. In 2004, DEEP’s Office of Long Island Sound Programs administered a survey to assess the needs and priorities of coastal public use and access. Of those that responded to the survey, 81 and 83

percent indicated a need for additional public access to shoreline wildlife viewing and boating opportunities, respectively (DEEP 2015).



**Figure 8.** Park and recreation facilities that are most important to develop statewide, identified by surveys administered in the 2005 Statewide Comprehensive Outdoor Recreation Plan (SCORP). Respondents were asked to pick the top three most important facilities to develop from a list of all facilities. The blue bars represent the intensity of need. The total bar length represents the depth of need. Source: DEEP 2011

In order to meet these statewide outdoor recreation demands and others, DEEP and its partners should protect lands and waters with the highest potential to afford them. As they are acquired, DEEP will evaluate lands that are added to State Park, Forest, and other areas to expand recreational opportunities for persons with disabilities, such as creating paths of travel to and from existing accessible features.

## D. Open Space in Urban Communities

Connecticut's most densely populated areas are also some of the most vibrant, driving the state's innovation, tourism, and culture. However, the development of cities in terms of infrastructure and transportation has concentrated a disproportionate percentage of potential pollution sources in urban areas that may cause disproportional health impacts on their residents, such as higher risk and incidence of asthma and low birth weight.

The conservation of natural tree and vegetated ground cover in cities removes pollutants from the air, promotes rainwater infiltration, and lowers air temperatures, thereby reducing asthma rates, surface water runoff, and rising energy costs (Nowak and Crane 2002; Nowak et al. 2006). Similarly, urban parks, trails, and riverfront pathways provide a safe and attractive means of physical fitness and disease risk prevention.

In addition to pollution, food insecurity is a concern in urban communities for contributing to high incidences of obesity, diabetes, and other diseases. Some of the state's urban areas are considered "food deserts," or low-income neighborhoods with inadequate access to fresh, healthy, and affordable food, by the U.S. Department of Agriculture. These health impacts can be reduced when natural land covers and community gardens are incorporated into city planning.

In its efforts to ensure that all segments of the state's population has equal access and benefits of its programs and services, DEEP considers urban areas in its land acquisition and open space grant programs project selection criteria. The State



The Town of Bloomfield and the Wintonbury Land Trust acquired Lisa Lane Farm for the creation of an urban farm and community gardens, with partial funding from a DEEP open space grant.

[Open Space and Watershed Land Acquisition](#) and [Urban Green and Community Gardens Grant Programs](#) help to reduce food insecurity, encourage active lifestyles, and strengthen

neighborhood relationships by providing DEEP's land conservation partners with funding towards acquiring new or enhancing existing urban open space, community gardens, and passive outdoor recreation opportunities.



Auerfarm State Park Scenic Reserve in Bloomfield has views of Hartford's skyline and abuts a local 4-H club, providing additional scenic greenspace and outdoor recreation within the greater Hartford area.

The [Recreation and Natural Heritage Trust Program](#) (RNHTP) plays a major role in adding lands to DEEP's system of State Parks, Forests and Wildlife areas, though the bulk of these areas mainly exist outside urban developed areas. This is partly due to the combination of limited available bond funding and the relatively high cost of land in urban areas.

Recommendations made in the new Green Plan should improve the identification of appropriate acquisition opportunities and increase acquisitions of land in urban areas.

One of the most recognized obstacles facing Connecticut's urban populations in accessing open space is a lack of transportation. Many urban residents lack transportation to open space and recreation opportunities often found in rural areas, and public transportation is currently unavailable to certain State Parks or Forests. Linking urban communities to open space within their cities and in other towns is critical because it better connects residents to the public lands they own, diversifies the constituency and support for environmental protection, and ensures equity across the state.

In its efforts to raise awareness about urban environmental issues and public health concerns that disproportionately affect lower income and urban communities, DEEP's [Office of Environmental Justice](#) partners with the Parks Division and youth, agricultural, disability, and other community groups to provide environmental educational programs that bring urban communities to state and local open spaces. For example, each summer, children from urban areas are taken to visit State Parks or Forests to learn about water, air, habitat, wildlife, and more as part of DEEP's [No Child Left Inside®](#) initiative.

A solution to improving public access to open space in populated areas is to acquire more land or vacant lots in urban areas, and to do so proactively within the urban periphery before development in those areas intensifies. Coordinated efforts by the state and federal agencies, cities, and non-profit conservation organizations to convert brownfields into greenspaces serves as another means to improve residents' access to open space and the benefits it provides.

Partnerships among the State of Connecticut, the Environmental Protection Agency, and municipal partners can ecologically revitalize blighted lands in urban areas into scenic recreational and educational greenspaces where residents can find low-impact opportunities to picnic, take walks, watch wildlife, and other passive activities (USEPA 2009). Some lands that are now brownfields in Connecticut could be converted to important wildlife habitat and places where green infrastructure retains and renovates polluted stormwater.

## **E. Working Farmlands**

Connecticut's history of agriculture has shaped the state's bucolic landscapes and a cultural heritage so valued today. Agricultural lands and heritage are major assets that contribute to economic activity and significantly enhance the quality of life for residents and visitors to the

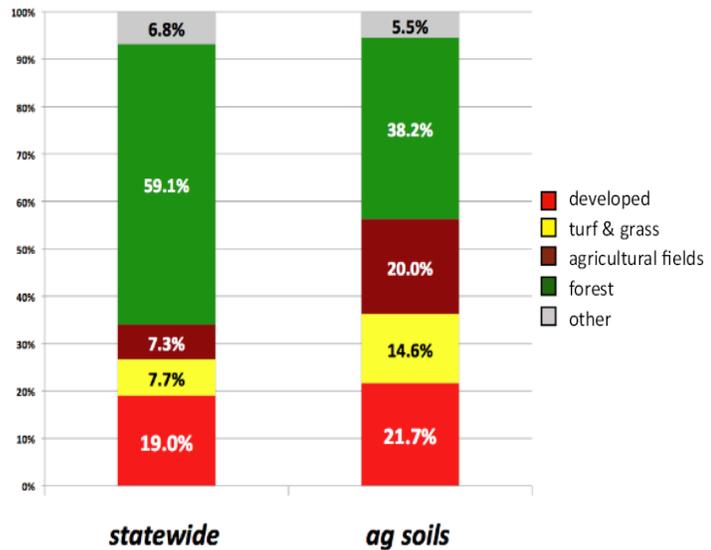
state. The stewardship of Connecticut’s 321,000 acres of cropland, pasture, and farm woodlands provide a host of environmental and social benefits.

Some environmental and social benefits to protecting and stewarding farmlands include reducing reliance of food and other products shipped from long distances, encouraging healthy eating habits, and the provision of nesting habitat for significantly declining grassland bird populations. In addition, preserving barns, stone walls, and open fields help define community identity, rural character, and maintain important links to the state’s history and culture (CT DoAg 2012).

Farmland today is a limited resource in Connecticut, where the population density is high, the pressures to develop land are intense, and the price of farmable land is expensive. In 1910, farmland once covered 68 percent of the state, whereas now it only covers about 7 percent (NASS 2014b, Wilson and Chester 2010).

According to an analysis of statewide land cover change by the Center for Land Use and Education and Research, 39,680 acres of agricultural fields were lost to development and related

**Figure 9.** Connecticut land cover distribution in 2006. Left: entire state area. Right: land cover types covering prime and important agricultural soils. Source: Wilson and Chester 2010



land covers between 1985 and 2006 (CLEAR 2014). Moreover, in 2006, only about 20 percent of land uses overlying prime or important agricultural soils were agricultural fields (Figure 9).

Next to the availability of what farmable land remains, intergenerational land transfer is a major obstacle to the protection of agricultural lands from development into uses incompatible with open space purposes. Current farmers may pass their lands to their children or relatives who may not share a desire to keep farming. These new farm landowners can be pressured to sell their property to a land developer.

To counter the loss of productive or historical farm and farm woodland to development or other land use changes, DEEP, the State Department of Agriculture, and local non-profit conservation organizations have been working alongside private landowners to plan for the future conservation of their properties. These partnerships are key to effectively protecting or transferring working and retired farmlands to other farmers or landowners who share the same conservation vision for Connecticut's agricultural heritage.



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The USDA-NRCS, DEEP, and Cornwall Conservation Trust purchased a conservation easement to protect the scenic, Housatonic River Valley vista and significant agricultural soils on Cooley Farm, a farm that has been in the Cooley family since about 1940.