

Conservation Planning Tool for the Lower Connecticut River and Coastal Region: 2025 Update



Photo: Kim Curry

The land trust and the committee began working on this project in September of 2024 and held 4 hybrid meetings through March of 2025. The technical GIS work and approval process continued through the Spring and Fall.

We hope the tool helps our resource managers, conservation community and municipalities to proactively conserve the resources and wildlife habitats the committee feels are most at risk, and helps to maintain and enhance the habitat corridors of the region that we are so lucky to have that protect the region's biodiversity, water quality and quantity, and scenic and working lands in the face of climate uncertainty.

Today's Presenters



Lower Connecticut River Valley
Council of Governments

Margot Burns, Senior Environmental Planner
RiverCOG



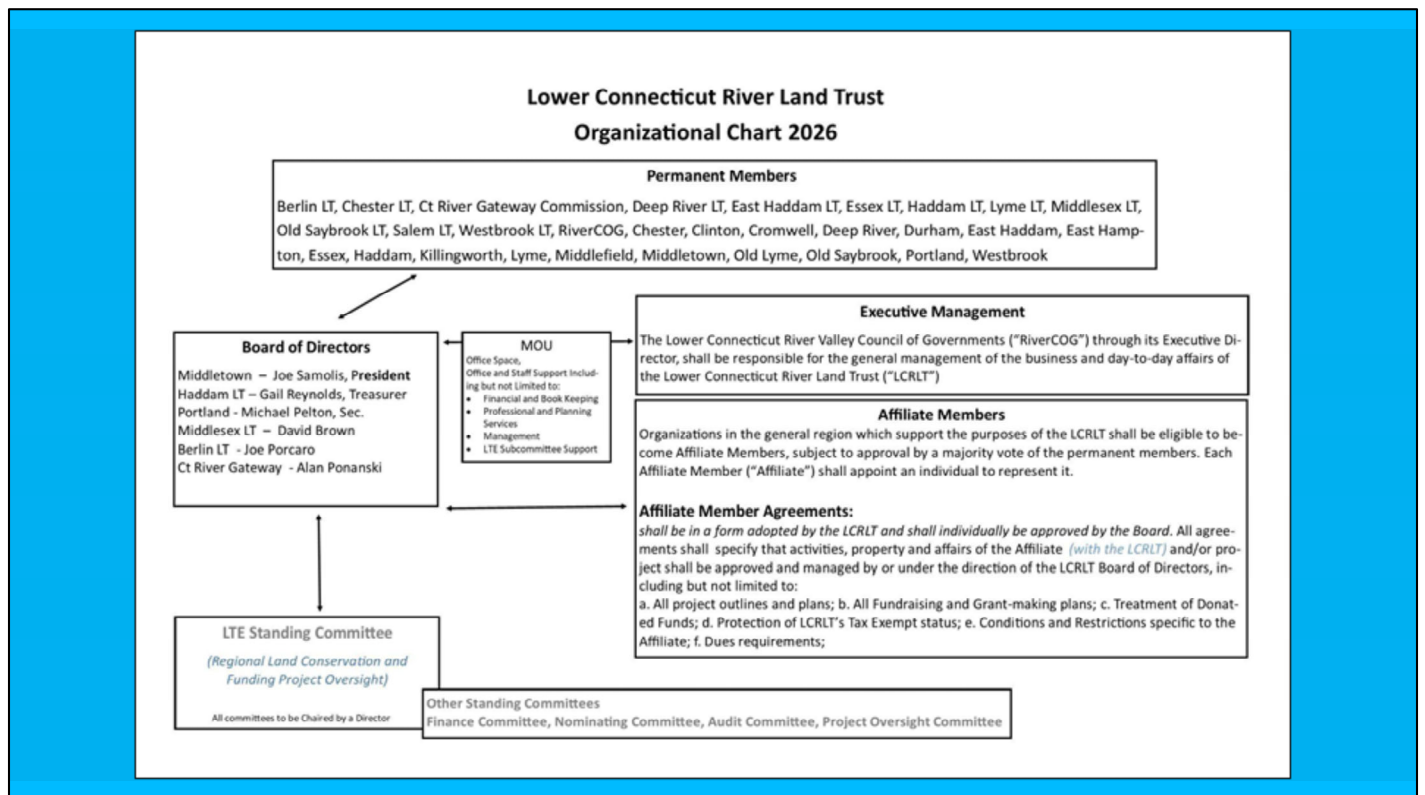
NPS RTCA
RIVERS, TRAILS & CONSERVATION
ASSISTANCE PROGRAM
www.nps.gov/rtca

Stephanie Stroud, Community Planner
National Park Service
Rivers, Trails and Conservation Assistance Program



NPS RTCA
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Elizabeth Brown, Community Planner
National Park Service
Rivers, Trails and Conservation Assistance Program



The Lower Connecticut River Land Trust **works to support the conservation needs of the land trusts and communities of the Lower Connecticut River Region.**

Its mission is to **conserve, study, steward, and promote the unique values and scientific significance, natural and working lands, and historic, ecologic, cultural, and scenic resources of the communities of the lower Connecticut River Valley Region.**

Its members include land trusts that work in the region and the 17 municipalities that belong to RiverCOG. Other organizations that support the purposes of the land trust are also eligible to become members.

The formal 501(c)(3) land trust was formed from the informal Lower Ct River and Coastal Region Land Trust Exchange a program begun at CRERPA and then RiverCOG.

Our Steering Committee

Richard Potvin, USFWS, Manager Stuart B. McKinney National Wildlife Refuge

Garret Timmons, USDA-NRCS, District Conservationist, Connecticut Norwich Service Center

Thomas Worthley, UCONN, Extension Professor, Forestry

Alex Amendola, CT DEEP, Forester (Cockaponsett State Forester)

Matthew Goclowski, CT DEEP, Supervising Fisheries Biologist

Joseph Samolis, LCRLT, President, (Middletown Representative)

Gail Reynolds, LCRLT, Treasurer - Haddam Land Trust, Treasurer - Haddam Conservation Commission, Chair - Connecticut River Gateway Commission, Member

Lisa Wahle, Chair, Chester Conservation Commission

Joseph Porcaro, LCRLT, Board of Directors - Berlin Land Trust, Director and Treasurer

David Brown, LCRLT, Board of Directors - Middlesex Land Trust, Former Executive Director and Current Board Member

Dr. Melvin Woody, LCRLT, Secretary - Ct River Gateway Commission, Former Chair and Ex Officio Member

Laurie Giannotti, Deep River Land Trust, President

Members of the steering committee for this project included:

Federal and State Partners:

Richard Potvin, USFWS, Manager Stuart B. McKinney National Wildlife Refuge

Garret Timmons, USDA-NRCS, District Conservationist, Connecticut Norwich Service Center

Thomas Worthley, UCONN, Extension Professor, Forestry

Alex Amendola, CT DEEP, Forester (Cockaponsett & Nehantic State Forester)

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Members of the LCRLT Board:

Joseph Samolis, LCRLT, President, (Middletown Representative)

Gail Reynolds, LCRLT, Treasurer (Haddam Land Trust)

Joseph Porcaro, LCRLT, (Berlin Land Trust)

David Brown, LCRLT, Board of Directors – (Middlesex Land Trust)

Dr. Melvin Woody, LCRLT, (Gateway)

Other LCRLT Member

Laurie Giannotti, Deep River Land Trust, President

Lisa Whale - Chair, Chester Conservation Commission

Agenda for Today

Project Background

The Data

The Maps

Using the Maps

What Are Your
Recommendations?

Q & A



Conservation in the Lower Connecticut River Valley

Project Background

Challenges to Conservation

Project Data

Regional Model

Local Model

Map Exercise

Review

Additional Recommendations

Q & A Discussion

Project Background





The Lower Connecticut River Valley is a uniquely beautiful place. It is where New England's longest river reaches the sea. There are salt marshes, cedar swamps, forests, meadows, ridgelines, waterfalls and sandy beaches. It has been called the "Gateway to the Great North Woods," because this landscape is so important for so many species that migrate through it to the North. Although the area is densely populated, so much of the landscape is undeveloped, creating many important areas for people and wildlife to thrive. This landscape provides so much for us, including our clean drinking water, food, culture and heritage, places to recreate and enjoy the outdoors, and beautiful scenery that can be enjoyed all year long. We have many generations of stewards to thank for their care to conserve and protect the land we enjoy today, from the Indigenous communities who have lived here since time immemorial, to the many conservationists and preservationists who have lived and worked in this area to ensure future generations can inherit this very special place.

Despite the work of so many to keep the Lower Connecticut River Valley habitat so rich, there are many challenges to contend with for conservation. A changing climate, a housing crisis, solar energy production, just to name a few. In this presentation, we are offering a tool created by a committee that have deep connection to this landscape and many many decades of experience in conservation and resource management. This mapping tool can help planners and decision makers make important decisions for the resiliency of our ecosystems, so that many more generations can enjoy this abundant valley.

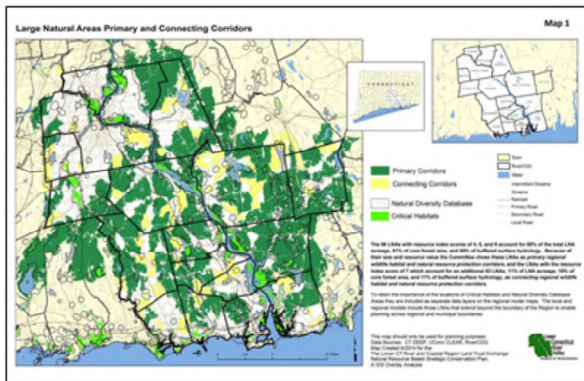
Forming a Committee: Bringing together a community of conservationists....

- CT Deep Fisheries Division; aquatic resources management and conservation, fisheries management, and restoration of migratory fish species
- manager of Cockaponset State Forest, Nehantic State Forest, and The Preserve in Old Saybrook; forester for 10 years; forest ecology and resource management
- Long term conservation volunteer working in town
- Botanist and ecologist, 30 years
- Planner; past Director of Planning, Conservation and Development for City of Middletown
- Forestry; Professor, UConn Extension, 40 years
- Berlin Land Trust, 30 years
- Manager, Stewart B McKinney National Wildlife Refuge; 30 years working with partner organizations for wildlife conservation
- District Conservationist USDA-NRCS; conservation planning, wildlife management, ecology, and agriculture
- Chester Conservation Commission; natural resource management, CT DEEP, 28 years; water quality monitoring and education, wetland identification and wildlife habitat management; Ledyard Conservation Commission.

.... with, collectively, centuries of experience....

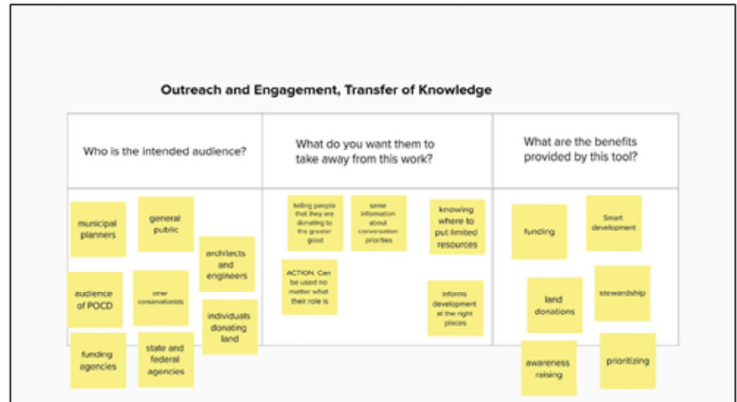
This tool was created by a 12 person committee with conservation backgrounds from across the region, with technical support from RiverCOG and the National Park Service. Most of the Committee participated in the 2014 planning process. This is a list of some of their experience that they shared with us. This Committee made decisions on the data that was selected for and weighed in our mapping tool. They hoped it could help planners to inform the public, create a way to have important conversations, and be a tool to help make decisions for management and stewardship of our landscape so that it may continue to provide many benefits for future generations. The Committee hopes this work can also help inform additional planning efforts for land trusts, municipalities, and more.

Project Background



2014 Plan & GIS Map

*"A **climate-adaptive** lower Connecticut River valley watershed that has **large, connected natural areas** that provide **habitat for diverse wildlife**, protect **water quality and quantity**, and protect **working and scenic lands**. "*



Virtual workshop with committee to update the plan for 2025

The tool you will learn about here today is an update of the *2014/15 Lower CT River and Coastal Region Land Trust Exchange Natural Resource Based Strategic Conservation Plan, A GIS Overlay Analysis*. For the 2025 update, we hoped to update the 2014 plan and create a **decision-support tool** in GIS, create **recommendations for priority natural resources and lands** for conservation, and create accompanying **communications tools** that will allow our conservation and planning community to make informed decisions about conserving local lands and resources in the face of climate change. This power point is one of our communications tools to help get the word out about this GIS tool and share how it can be used.

Challenges with Conservation

- **Changing climate**
- **Balancing other community needs and priorities**, such as housing and economic development
- **Transportation**
- **Data availability and education** (you can't protect what you don't understand)
- **Finding shared value** in conservation
- **Public Access**
- **What else?**



Can conservation and infrastructure go hand in hand? (Route 9 in Middletown)

There are many challenges that come into play when considering conservation strategies in the Lower Connecticut River Valley and beyond. One of the most notable challenges when planning for conservation is a changing climate, which continues to shape the landscape in unprecedented ways, particularly in the Lower Connecticut River Valley (LCRV) and its coastal environs. In the LCRV specifically, there is a real need to balance community needs with environmental and climatological needs. Housing and economic development remain extremely important, as the population grows and the region seeks to keep up with the services, economic vision, and residential objectives of the region and state.

Moreover, a challenge that is particularly relevant across New England and the Northeast Corridor is transportation, as large-scale roadways are necessary for supporting modern transportation and employment endeavors, but also serve as barriers and enablers of landscape discontinuity.

Additionally, it's important to consider that landscape conservation decisions must be rooted in data and education because you cannot protect what you don't understand. While information and educational resources regarding landscapes, native habitats, climatological patterns, and the like continue to become more readily available, it is necessary to stay abreast of changing data to ensure that conservation decision making remains relevant and accurate.

Finally, of the utmost importance is identifying shared community value in conservation. While it may be challenging to identify mutual values in large landscape conservation planning, it is a useful tool to communicate the relevant ways in which conservation, or lack thereof, may reflect and affect the everyday lives of those in the LCRV.

The Data



Photo: Long Island Sound Resource Center

Selecting the Data



- The more diverse a landscape is, the more life can thrive there, and the more likely it will be **resilient** to change.
- These data sets help us understand **where important habitats are located**, so decision makers can make decisions about where to conserve lands in the future.
- These unique data layers were **selected by the committee** based on years of knowledge, relationship with the land, and technical expertise in the Lower CT River Valley.
- The data highlights species and habitat types that are **decreasing in the landscape**.

During one of the planning workshops, the committee ranked all of the datasets based on group priority and consensus, working collaboratively to decide what available data was most important to be incorporated into the final geospatial information systems models. The committee selected whether or not the data should be employed in the local model, regional model, or both, basing their decisions off of years of knowledge, a strong relationship with the land, and years of technical expertise in the LCRV.

The group decision-making process is depicted here in the diagram above. The group selected the data for each model based on the understanding that the more biodiverse a landscape is, the more life can thrive there, and the more likely it will be resilient to change. And the more biodiverse a landscape is, **the more benefits these ecosystems can provide to the health and well being of all of us**. Once the data was selected for each model, they were to be incorporated into final local and regional models via GIS, or geospatial information systems.

These datasets help us to understand where important habitat types are located, so that decision makers can make decisions about where to conserve lands in the future. The data within these models highlights species and habitat types that are decreasing in the landscape.

Large Natural Areas



Photo: Kim Curry



Photo: Haddam Land Trust

- **Contiguous areas of natural land cover (undeveloped lands / very limited development) greater than 5 acres**
- **These large tracts of land allow wildlife to move freely** from one point to another for searching for food, migration, breeding, finding shelter, etc. undisturbed so they can complete their life cycle.
- **Does not include “fragmenting features,”** usually a road, which are dangerous for wildlife
- **This does not include:** cultivated land, such as farms; developed land like pavement or lawns
- **5 acres was considered a reasonable size of land by the committee who worked on the plan based on their experience with conservation at the regional scale.** (conservation professionals, land trust members and community members)

Large Natural Areas (LNA's) are the foundation to a lot of the information you will see on the map. These areas are contiguous areas of natural land cover greater than 5 acres that allow for movement from any one point in the area to another without having to cross a fragmenting feature, which can be dangerous. These are usually a road. They have limited development.

Large, connected natural areas are critical for many wildlife species to live out their life cycles (breeding, finding food, creating shelter) relatively undisturbed. These areas do not include farm land/cultivated land.

5 acres was agreed upon by the committee as a reasonable size for consideration for conservation at a regional scale.

Core Forest



- Core forests are **habitats that support the diversity of species that live primarily in the forest**. The dataset represents forests that are at least 300' from the edge of the forest block.
- This habitat type **helps store our water and keep it clean**, recharging our aquifers and streams.
- Duffs that sit on the forest floor **prevent soils from drying out**, retaining moisture
- These habitats are **decreasing in our landscape due to development**

Core forest habitat supports a diversity of interior forest species. They maintain air quality, and water quality and quantity and are decreasing in our landscape due to development. Forests are important for storing water and storing carbon. Duffs that sit on forest floor prevent soil from drying out.

Early Successional



- “**Scrubby, shrubby landscapes**”: marsh species, recently disturbed forest, reverting field, shrubland. Sometimes referred to as “thickets.”
- **These landscapes require disturbance** or otherwise would turn into forests. This could be from storms, beavers, fire, or a maintained utility corridor.
- This habitat type is **dwindling in the region** and species who rely on it, like the New England Cottontail and American Woodcock, have less places to live.

Early Successional Habitat are habitats that are dominated by shrubs less than 5 meters tall, with grassland or herbaceous areas greater than 80% of vegetation. Some call these types of landscapes “thickets.” They are necessary habitat for species like the beloved New England Cottontail. This type of habitat is critical for many species that are in decline in our state.

An interesting requirement for this landscape is that it requires a disturbance to be maintained. This could happen through storms, beavers, or a fire. It can also be created through interventions like maintained utility corridors, like the one next to Coyote Blue in Middletown. Without disturbance, whether natural (like fire) or manmade these landscapes would eventually “succeed,” and turn into forest landscapes.

Early Successional Habitat is decreasing in the state. Much of the state’s open fields and farmland has reverted back into forests. Now species that rely on early successional habitat have limited places to live.

This data set was developed by the committee, combining two different datasets: one from USGS land cover data and one from UConn. This layer unioned the “Young Forest and Grassland” classifications of palustrine scrub/shrub, recently disturbed forest, reverting field, and shrubland and the NLCD woody wetlands classification to create the “early successional habitat” layer to maintain species diversity dependent on early successional habitat.

Water and Wetland Areas (Surficial Hydrology)



Photo: USFWS



Photo: Kim Curry

- Includes **wetland soils, water, streams and intermittent streams**
- Chosen to maintain and support the **diversity of freshwater inland wetland and marine species**
- With their 300' buffer, these landscapes help to:
 - **Prevent erosion**
 - Maintain **cool stream temperature and woody habitat for fish and other species** like turtles, otters, minks and others.
 - **Clean the water** to maintain water quality
 - **Slow down water flow**, allowing the water to soak into the ground and be stored.
 - **Absorb sudden flash floods** to maintain calmer waters for the life cycles of species.
 - Make water bodies **more resilient**.

The committee chose to include water and wetland areas because of their critical link to wetland and marine species and all life broadly speaking, and their broader benefits to keeping our water abundant and clean.

Critical Habitats

- Critical habitats are those designated as key habitats for **species of Greatest Conservation Need** in the Connecticut Comprehensive Wildlife Conservation Strategy and CT Wildlife Action Plan by CT DEEP.
- Critical habitats can highlight areas of ecological significance and species diversity within the state, and each of the **12 key habitats identified are associated with unique suites of wildlife found in the state.**
- In the Connecticut River Valley, these **key habitats are primarily comprised of wetland features and ridges**



Critical habitats of the state are determined by DEEP and are designated as key habitats for species of Greatest Conservation Need in the CT Comprehensive Wildlife Conservation Strategy and CT Wildlife Action Plan. In our model these habitats include a 300 foot buffer of surrounding land. Starting with over 1,000 species of wildlife found in the CT Natural Diversity Database, species were divided into 5 taxonomic groups, with a draft list of the species of greatest conservation need first compiled by CT DEEP. Based on the existing Vegetation Classification for Connecticut, a draft list of 12 habitats was developed as key habitats which are associated with unique suites of wildlife species in the state, or those with the Greatest Conservation Need. These habitats are known to host a number of rare species including highly specialized invertebrates with very specific habitat associations and are recorded in the statewide Comprehensive Wildlife Conservation Strategy.

Natural Diversity Database Areas



- Natural Diversity Database Areas represent known locations of **state and federal listed species, or those which are endangered, threatened, or of special concern** by the CT Endangered Species Act.
- The Natural Diversity Database Areas are intended to be used as a tool to show potential impacts of state-listed species and by groups wishing to identify areas of potential conservation concern to **maintain species diversity statewide**.

The NDDBs represent known locations, both present and historic, of state and federally listed species of threat, endangerment, or special concern by the State of CT Endangered Species Act. The dataset represents 100+ years of field observations, scientific collections, and publications, and the data have been compiled from a variety of sources. However, land which is privately owned was not surveyed for the purposes of this dataset, so there may be some gaps in information from that perspective. The NDDBs are intended to be used as a tool to display the potential impacts of state-listed species, enabling groups who wish to identify areas of potential concern to maintain species diversity across Connecticut.

Within the local model, the NDDB is used as a constant dataset on the map; CT DEEP also uses this data, which serves as a catch all dataset. The NDDBs are not used in the large natural areas (LNAs) final analysis; Importantly, the dataset is not consistent across geographies or species

Cold Water Watersheds

- Cold water habitats have been identified by CT DEEP using **fish species** as an environmental indicator and direct water temperature measurements across the state.
- Cold water streams are indicative of small, lesser disturbed streams in the state of Connecticut, which are **important for the health of native fish species**, as cold water watersheds are likely **more forested and less developed than others and better maintain native species diversity**.



Photo: Judy Preston



Photo: East Haddam Land Trust



Photo: MBurns

The Cold Water Watersheds dataset defines important water temperature thresholds, which provide the ability to identify and classify areas of cold water stream habitat. The habitats have been identified using fish species as an environmental indicator and direct water temperature measurements from across the state. Cold water is indicative of native ecosystem and fish health because these cold waters indicate that the area is surrounded by undisturbed landscape and lesser disturbed streams. Cold water better maintains species diversity and water quality and quantity. Moreover, these cold water watersheds are necessary for fishing, a popular recreational activity in the area.

Sand and Gravel Deposits



Photo: MBurns



Photo: USEWS



Photo: Adrian Stroud



Photo: Adrian Stroud

- Glacial meltwater deposits are particularly emphasized because these sediments are the **major groundwater aquifers** in the state as well as the **major source of construction aggregate**.
- These deposits are particularly important for the **health and diversity of many of Connecticut's species**, including amphibian and reptile populations.
- Represent a dry, well-drained low land habitat that is **threatened by development** because of its very nature of following stream courses.
- It's also a **habitat that many of CT's threatened and endangered species inhabit**, such as the puritan tiger beetle.

Glacial meltwater deposits, or stratified deposits, are particularly emphasized because these sediments are the major groundwater aquifers in the State and are also the major source of construction aggregate. These deposits are described in terms of their subsurface distribution of textural relationships as well as their aerial extent. These deposits are important for the health and diversity of many of Connecticut's species, including amphibians and reptile populations. These deposits represent a dry, well-drained low land habitat that is threatened by development because of its very nature of following stream courses. These deposits are particularly important for amphibians and reptiles and are home to many grasses, wildflowers, and insects, as they support a wide diversity of wildlife. From a recreation perspective, it is easy to hunt in these locations.

Important to amphibians and reptiles - Deposit types from this data set were recommended By Mr. Hank Gruner, *Conservation Biologist, Herpetologist*

TNC Landscape Diversity

- Landscape diversity is an **estimate of the number of microclimates and climatic gradients available within the local area, elevation range, and the density and configuration of moist and wet landforms.**
- Diverse landscapes provide habitat for species' **climate change adaptation.**
- The diversity and persistence of species within a local area increases with **high landscape diversity** relative to other examples of the same geophysical settings.
- **The more varied the landscape, the more microclimates that exist, allowing species to be more resilient in the face of climate change.**



The TNC Landscape Diversity data set describes the number of microclimates and climatic gradients available within the local area, elevation range, and the density and configuration of moist and wet landforms. Diversity of landscape is important, as it considers temperature, moisture, and altitude changes within an area, giving species more places to go and hide or seek respite during climatic changes. In general, the more varied the landscape, the more microclimates there are, allowing species to seek refuge when necessary, rendering them more resilient. The prevalence of landscape diversity provides habitat for species' climate change adaptation. Examples of this include hills with different slopes and aspects, and dry, moist or wet flats. We expect that the diversity and persistence of species within a local area increases with high landscape diversity relative to other examples of the same geophysical setting.

This ridgeline, for example, would have a lot of different microclimates for species to go to if it's raining, hot, etc.

Sea Level Rise



- This dataset was created as part of the NOAA Office for Coastal Management's efforts to depict potential sea level rise and its associated impact on the nation's coastal areas, providing coastal managers with a preliminary look at sea level rise and coastal flooding impacts.
- The Steering Committee chose to assess these conditions using a planning horizon of **2050**, which indicates **1.5 feet of projected sea level rise**. This plan is to be updated every 10 years, and this data shall be revisited at this time.
- This dataset was intersected with undeveloped land cover classifications of the NLCD 2023 in order to determine where land conservation could occur and provide room for wetland migration. This is important because **as sea level rises, freshwater and marine wetlands may need to migrate to preserve their habitats.**

The dataset was created as part of the NOAA Office for Coastal Management's efforts to depict potential sea level rise and its associated impact on the nation's coastal areas, which allows coastal managers to have a preliminary look at sea level rise and coastal flooding impacts. 1.5 feet of projected sea level rise was chosen by the committee, as the group used a planning horizon of 2050, which was derived from a recommendation from CIRCA's *Sea Level Rise in Connecticut Final Report*. This plan is to be updated approximately every 10 years, and this data shall be revisited at this time.

The sea level rise dataset was intersected with the NLCD 2023 undeveloped land cover classifications in order to determine where land conservation could occur and provide room for wetland migration. This is important because as sea level rises, freshwater and marine wetlands may need to migrate to preserve their habitats.

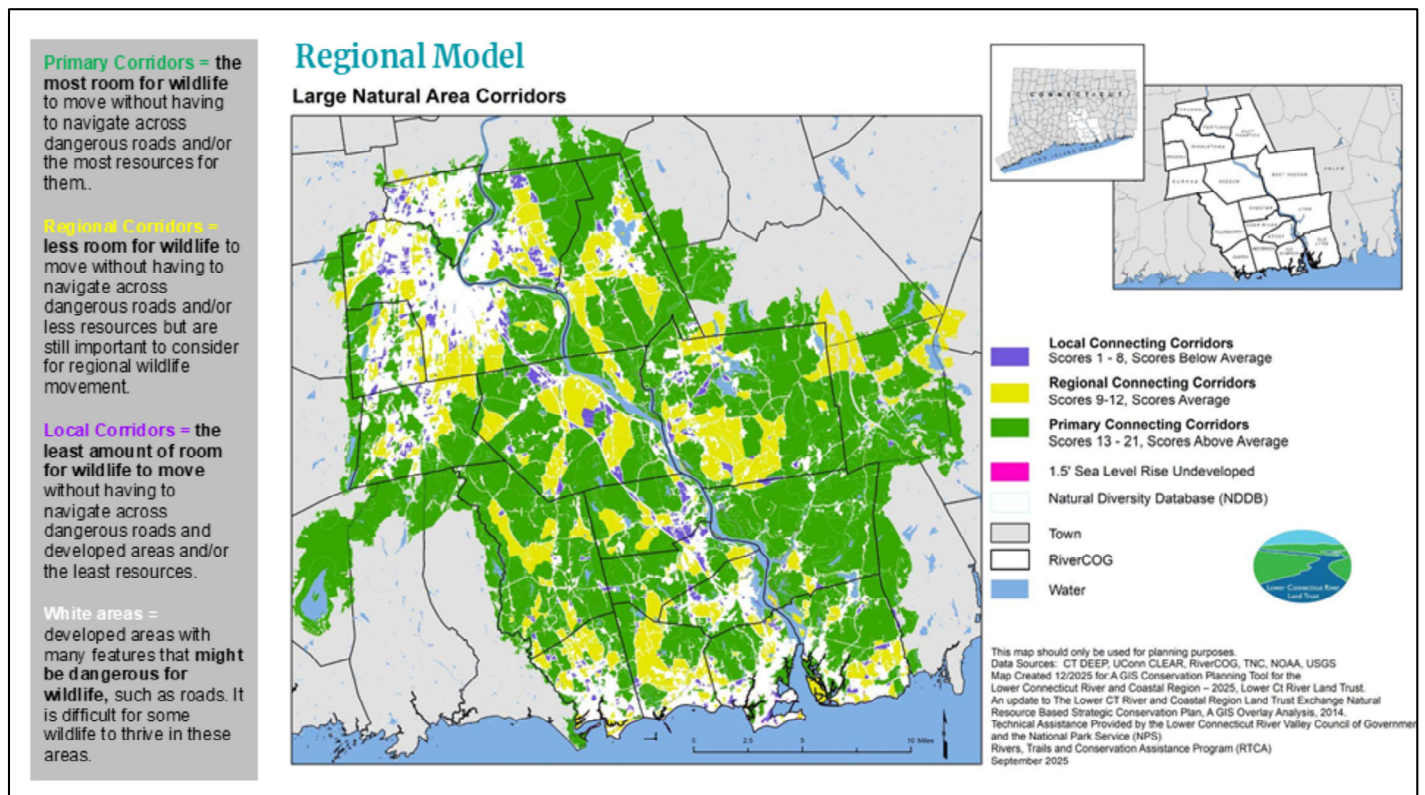
There is great concern from natural resource professionals about consequences of sea level rise on wetlands in our region. Wetlands might turn to mud and not support wetland species and might not have the ability to migrate. Shorelines are very dynamic environments. Much needs to be researched in this area.

February 2019, Written by: James O'Donnell, Department of Marine Sciences and Connecticut Institute for Resilience and Climate Adaptation

<https://circa.media.uconn.edu/wp-content/uploads/sites/1618/2019/10/Sea-Level-Rise-Connecticut-Final-Report-Feb-2019.pdf>

The Maps





The regional model focused on the region's large natural areas. There are 1004 large natural areas associated with the LCRLT region which includes the RiverCOG region and the Town of Salem.

The Large Natural Areas were classified by:
Size (acreage) and their percent of Core Forest, Early Successional Vegetation, Surficial Hydrology, Critical Habitats, Cold Water Watersheds, Sand and Gravel deposits, and Landscape Diversity.

They are further classified into regional primary conservation corridors, regional connecting corridors, and local connecting corridors, totaling 259,870 acres, or a little less than 86% of the region's area, as this includes areas that cross the region's border.

Scores ranged from a high of 21 to a low of 1. High scores indicate LNAs that are generally larger, and/or have higher amounts and/or percentages of assessed natural resources. Those with above average scores from 13 – 21 account for 76% of the region's LNAs area, Those with average rank scores from 9 – 12 account for 20%, and those with below average rank scores from 1 – 8 account for 4.5%.

Sea Level Rise areas are included as a stand alone data layer due to its significance for conservation of wetlands in coastal and riverine areas of the region. Natural Diversity data is also included as a significant stand alone data layer as it represents areas where endangered and species of special concern maybe located.

There are 86 Primary Corridors, dark green on the map. They generally are the largest and/or most resource rich large natural areas and represent 68% of the area of all large natural areas; 81% of all core forest area; and 69% of all surface hydrology with intact buffer.

Connecting Corridors, yellow on the map, are the next 63 largest and/or most resource rich large natural areas; they represent 11% of the area of all large natural areas; 10% of all core forest area; and 11% of all surface hydrology with intact buffer.

Primary and Connecting Corridors account for 79% of the area of all large natural areas; 91% of all core forest area; and 81% of all surface hydrology with intact buffer.

Data Set Descriptions:

Percent Core Forest: (any point in the forest 300' or more from any type of development);

Percent Surface Hydrology: (union of water bodies, streams, intermittent streams, and wetland soils with 300' intact buffer vegetation.)

Percent Early Successional:

This data set was developed by the committee, combining two different datasets: one from USGS land cover data and one from UConn. This layer unioned the "Young Forest and Grassland" classifications of palustrine scrub/shrub, recently disturbed forest, reverting field, and shrubland and the NLCD woody wetlands classification to create the "early successional habitat" layer to maintain species diversity dependent on early successional habitat.

Critical Habitats:

Critical habitats of the state are determined by DEEP and are designated as key habitats for species of Greatest Conservation Need in the CT Comprehensive Wildlife Conservation Strategy and CT Wildlife Action Plan. These habitats include a 300 foot buffer of surrounding undeveloped land.

NDDB:

The NDDBs areas represent known locations, both present and historic, of state and federally listed species of threat, endangerment, or special concern by the state of CT Endangered Species Act.

Cold Water Watersheds:

The Cold Water Watersheds dataset defines important water temperature thresholds, which provide the ability to identify and classify areas of cold water stream habitat. The habitats have been identified using fish species as an environmental indicator and direct water temperature measurements from across the state. Cold water is indicative of native ecosystem and fish health because these cold waters indicate that the area is surrounded by undisturbed landscape and lesser disturbed streams. Cold water better maintains species diversity and water quality and quantity. Moreover, these cold water watersheds are necessary for fishing, a popular recreational activity in the area.

Sand and Gravel Deposits:

Glacial meltwater deposits, or stratified deposits, are particularly emphasized because these sediments are the major groundwater aquifers in the State and are also the major source of construction aggregate. These deposits are described in terms of their subsurface distribution of textural relationships as well as their aerial extent. These deposits are important for the health and diversity of many of Connecticut's species, including amphibians and reptile populations. These deposits represent a dry, well-drained low land habitat that is threatened by development because of its very nature of following stream courses. These deposits are particularly important for amphibians and reptiles and are home to many grasses, wildflowers, and insects, as they support a wide diversity of wildlife. From a recreation perspective, it is easy to hunt in these locations.

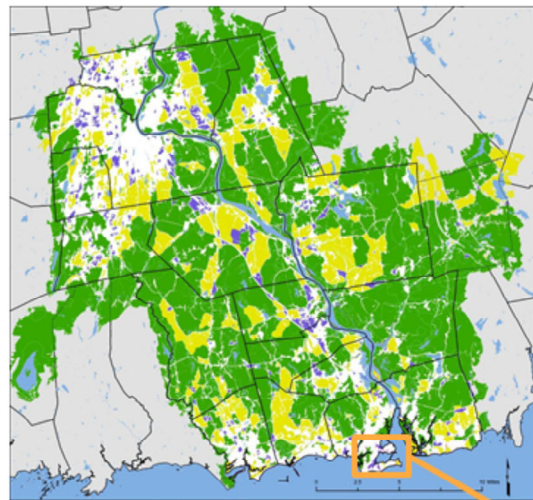
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The dataset was created as part of the NOAA Office for Coastal Management's efforts to depict potential sea level rise and its associated impact on the nation's coastal areas, which allows coastal managers to have a preliminary look at sea level rise and coastal flooding impacts. 1.5 feet of projected sea level rise was chosen by the committee, as the group used a planning horizon of 2050, which was derived from a recommendation from CIRCA's *Sea Level Rise in Connecticut Final Report*. This plan is to be updated approximately every 10 years, and this data shall be revisited at this time.

The sea level rise dataset was intersected with the NLCD 2023 undeveloped land cover classifications in order to determine where land conservation could occur and provide room for wetland migration. This is important because as sea level rises, freshwater and marine wetlands may need to migrate to preserve their habitats.



1.5' Sea Level Rise Undeveloped



Sea Level Rise = Undeveloped
Areas that will be inundated with salt water based on 2050 estimate of 1.5' rise

Considerations:

- Salt marsh migration – marshes will begin to move to accommodate changing tides
- Freshwater marsh inundation – these marshes may become infiltrated with salt water and may migrate

This is a close up of an area where the data indicates sea level rise will occur. Remember this is just for areas that are currently undeveloped.

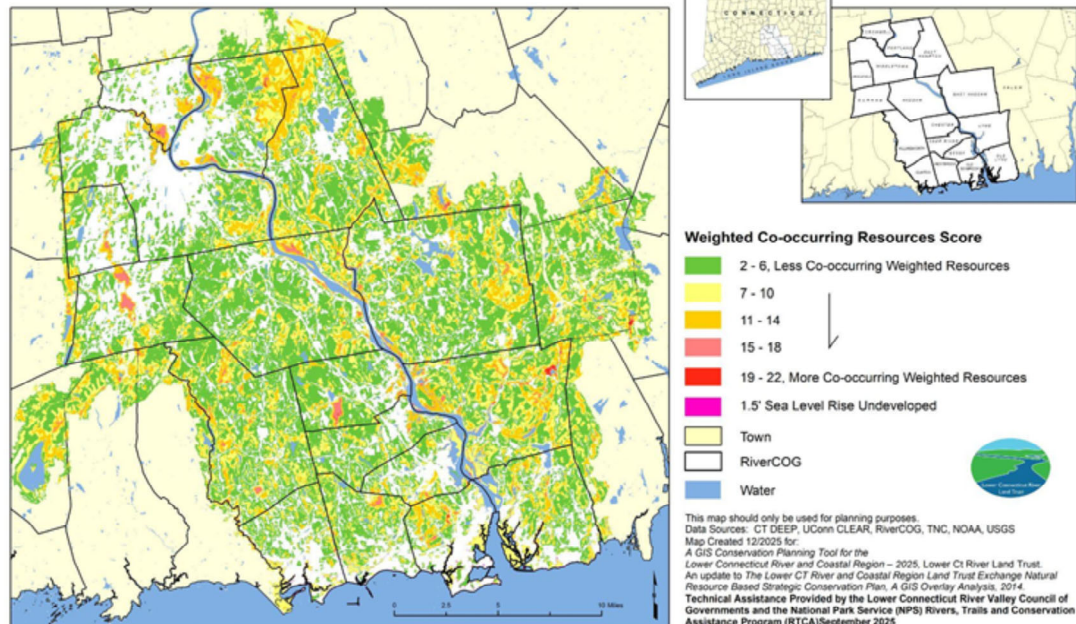
Local Model

Local Model 30m x 30m Grid Within Large Natural Areas

The "Hot Spot" Map:

The "hotter" the color, the more of the habitat types and weighted resources deemed important to the committee coexist.

Individually all resources considered in the model are important and it is recommended, because of limited financial resources, to take special considerations for conservation and management of protecting areas in LNAs that are high in value as they may be important for maintaining biodiversity and climate adaptation for species.



The local model assessed the occurrence of each assessed resource within each cell of a 30x30 meter grid across the surface of the LNA areas. Each resource was weighted in importance in relation to the entire group chosen for the project. The weighted scores for each were added together providing a total weighted score for each grid cell. High scores indicate where a greater number of and/or more heavily weighted resources are located. Individual cell scores ranged from a high of 22 to a low of 1. It is recommended to take special consideration for conservation, or stewardship of existing conserved areas of high value on this map as they indicate areas where many of the weighted resources deemed important to the committee coexist. Generally they represent resources and habitats most under threat from development and where many of the state's endangered and species of concern may be located. When used in conjunction with the regional model they can tell you where the abundance of co-occurring resources exist together in a particular LNA. All chosen data sets were included in this analysis. Data sets were weighted on a 1-3 scale. 3 being the highest weight. Most heavily weighted are core forest, early successional, surficial hydrology, critical habitats, cold water watersheds, and landscape diversity. Natural diversity database areas and sand and gravel deposits were weighted less heavily, and sea level rise the least.

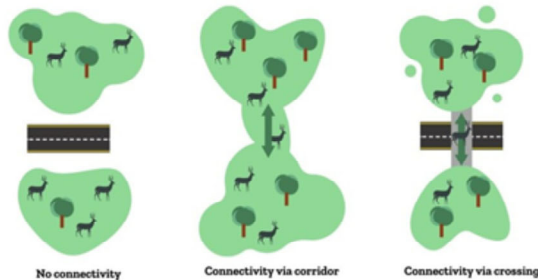
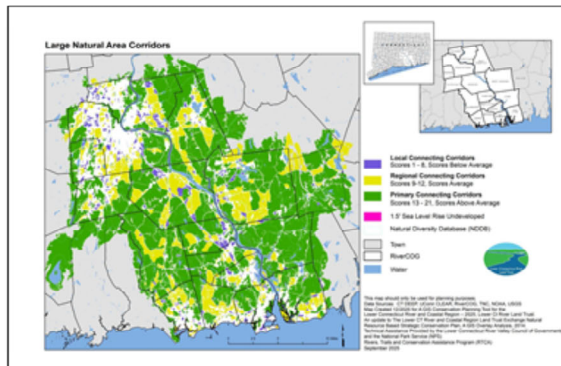
Data Set Weight - Core Forest 3; Early Successional 3; Surficial Hydrology 3; Critical Habitats 3; NDDB 2; Cold Water Watersheds 3; Sand and Gravel Deposits 2; TNC Landscape Diversity 3; Sea Level Rise 1.

Using the Maps



Photo: Mburns - Woodland Fair, Killingworth, Ct.

Key Takeaways



The Regional and Local Maps represent areas where endangered and connected habitat types are now in the region.

Our Large Natural Area Corridors are important to conserve and enhance because:

- **Wildlife need room** to make a home, eat, and mate. The more room we can provide for them, the more different types of species will be able to coexist and create stronger ecosystems.
- Large, connected landscape corridors with lots of different types of habitats will be **more resilient to natural disasters and other changes**.
- **Connecting corridors is critical to preserving biodiversity**: Maintaining biodiversity is the number one goal to creating a **healthy ecosystem for humans and wildlife**.
- **Dangerous fragmenting features, like roads, are the biggest threat to keeping landscapes connected**. Consider limiting these barriers or providing crossings.

Examples: pollinator pathways, neighborhood forest concept, wildlife corridor, natural bottom culverts

Image from: large landscapes.org

Recommendations

LNA Conservation Recommendations: Consider proactive landowner and land use commission education towards maintaining the habitat blocks as well as land conservation, when possible, along with exploring conservation planning and zoning opportunities. Some tools to consider are:

- Include LNAs in **plans of conservation and development as open space** under PA-490
- Proactive landowner education within LNA habitat blocks as **habitat neighborhoods**, much like the recent regional forest stewardship initiative around forest neighborhoods
- Proactive land conservation in the form of **conservation easements or in fee purchase** on the part of conservation organizations and municipalities
- Explore applicable types of **open space zoning and stream protection regulations**
- Consider and encourage landscape **restoration projects** in and along LNA areas to remove invasive species, plant native species, and restore eroded stream banks by both municipalities and private landowners
- Inventory and assess bridge and culverts for **wildlife crossing** possibilities
- Assess **dams for fish passage possibilities and/or removal**
- **Natural Hazard Mitigation Plans, Municipal Resiliency Plans**
- **Nature-based solutions**

Others from the Group?

LNA Conservation Recommendations: Consider proactive landowner and land use commission education towards maintaining habitat blocks as well as the importance of land conservation in those the corridors when possible, along with exploring conservation planning and zoning opportunities. Some tools to consider are:

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Map Demonstration: Using the Planning Tool

What would you like to look at?

+ Web Link

<https://rivercog.maps.arcgis.com/home/item.html?id=7095e9fa7e4a4e99be438c84adff5edf>

In Review....

- This GIS tool supports **informed conservation planning decisions** for wildlife habitat, water quality, and scenic landscapes amid climate uncertainty.
- Keep **Large Natural Area corridors as intact** as possible.
- **Protect and conserve around the “hot spots.”**
- **Limit fragmenting features** as much as possible.

This presentation today had a lot of information! We hope you will use this information to inform conservation decisions and consider the following key takeaways:

This GIS tool supports informed conservation planning decisions for wildlife habitat, water quality, and scenic landscapes amid climate uncertainty.

When considering landscape conservation decisions, keeping LNAs as intact as possible is a high priority landscape conservation endeavor. Moreover, protecting and conserving around the hot spots that are depicted on the previous maps is extremely valuable, as it seeks to conserve areas with the highest number of co-occurring resources.

And finally, it is recommended to limit fragmenting features as much as possible, as this further disrupts habitats and connected landscapes.

Additional Recommendations

- **Key areas for wildlife crossings** could be identified in the future to improve habitat connectivity in fragmented CT River Valley Landscapes.
- Consider GIS analyses to highlight the link between **viewsheds and ecosystem health**, aligning conservation with cultural and community values.
- **More data is needed** to better assess our ecosystems and ongoing challenges and opportunities
- **Connecting with Tribal communities**

Looking forward, we believe there are some additional ways to use the information presented in this conservation tool to conduct further analyses and regional exploration. First, this information could be used to identify key areas for wildlife crossings, in order to improve habitat connectivity in fragmented LCRV landscapes, helping to support habitat fragmentation rehabilitation. Additionally, this and future GIS analyses could be used to highlight the link between viewsheds and ecosystem health, creating the opportunity for conservation to align with cultural and community values. Finally, it is important to note that this tool cannot do it all, and does have its limitations. We recognize that more data is needed to better assess our ecosystems and ongoing landscape challenges, as well as climatological opportunities.

This tool will be available on ArcGIS online, for you to explore and use for your landscape conservation endeavors. It will be also be accessible via the Lower CT River Land Trust and RiverCOG websites. If you are interested in using the tool, we recommend that you get in touch with Margot to get more information and valuable insights about its use.

Q & A

- What are your initial takeaways and impressions?
- Is there any information that you would like further clarification about?
- How do you anticipate using this tool for future landscape conservation?
- What questions do you still have following this presentation?



- Flyers are available

Thank You & Contact Information

Thank you for your time today! If you have any additional considerations that you would like to share with us, please contact us!

Margot Burns, RiverCOG

MBurns@rivercog.org

Stephanie Stroud, NPS RTCA

stephanie_stroud@nps.gov