



Ellington CONSERVATION COMMISSION

Dedicated to Conserving Ellington's Natural Resources

NATURAL RESOURCE & WILDLIFE INVENTORY

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TABLE OF CONTENTS

I. INTRODUCTION	1
A. THE PROCESS.....	1
II. NATURAL RESOURCE INVENTORY	2
A. GEOLOGY	2
Bedrock Geology	3
Surficial Geology.....	3
B. SOILS	4
Wetland Soils.....	4
Prime & Statewide Important Farmland Soils.....	6
Soil Potential for Subsurface Sewage Disposal	6
C. WATER RESOURCES.....	6
Subregional Watersheds.....	7
Floodplains	8
Aquifers	9
D. FORESTED LAND	10
E. SIGNIFICANT HABITATS AND STATE LISTED SPECIES.....	11
Endangered, Threatened, & Special Concern Species.....	11
Wildlife Corridors	12
Riparian Corridors	13
III. CONCLUSION	13
IV. BIBLIOGRAPHY	14
V. APPENDIX	
CT NDDB Determination.....	A
Hockanum River Bird Documenting	B

I. INTRODUCTION

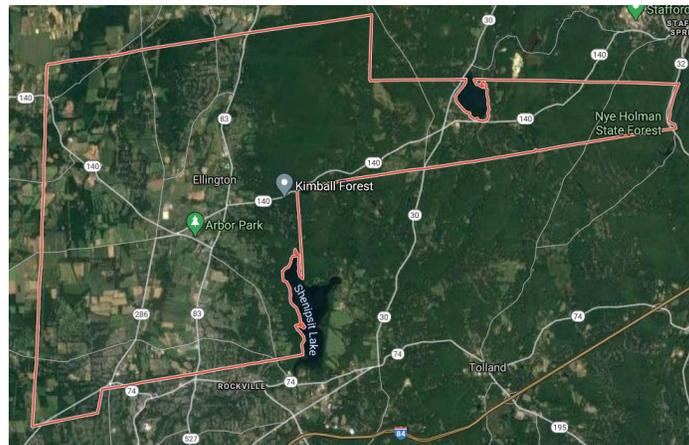
Ellington is a town rich with natural resources, diverse habitats and landscape, and varied plant and wildlife. The quality, quantity and distribution of natural resources effect the quality of life in town. The purpose of this inventory is to highlight major natural resources in Ellington and identify areas important to protect and preserve.

Understanding where natural resources are and how they interrelate will shape policies to help protect critical natural resources. This inventory is intended to guide future preservation recommendations and priorities, and serve as a guide when assessing areas suitable for development and areas important to preserve. This document will assist in furthering the goals and recommendations of the Ellington Plan of Conservation and Development (POCD), as may be amended from time to time.

A. THE PROCESS

The process of conducting a natural resource inventory begins with documenting the town’s natural attributes. These attributes include the geology (soils, surficial geology, bedrock outcrops), hydrology (rivers, streams, lakes and ponds), and biology (plant and animal habitat) of the natural landscape.

This inventory is prepared using Geographic Information System (GIS) technology, open source intelligence, and personal knowledge and observations from commission volunteers. These tools provide a means to map and analyze natural resources and assist in establishing policy to protect natural resources in Ellington. Mapping of natural resources provides an opportunity to observe, on a town-wide scale, the distribution of natural assets that define the local landscape. Understanding the composition and location of important natural resources adds context when establishing policy and priorities intended to protect critical natural features.



Town of Ellington

II. NATURAL RESOURCE INVENTORY

A. GEOLOGY

Geologically, Ellington is separated into approximately two equal halves. The western lowlands, known as the western farm belt, is part of the Connecticut River Valley and contains fiber-producing soils and relatively flat terrain. The eastern portion of town, known as the eastern highlands, is hilly and largely forested.

Where the eastern and western segments separate is an ancient north | south fault line created millions of years ago by continental collision. The fault line separates Ellington generally along Route 83 from the southernmost point where Ellington borders the Town of Vernon and extends in a northward direction for about six miles to the Town of Somers. The fault line is illustrated below.



Western Lowlands & Eastern Highlands

Long ago the eastern highlands were mountains thousands of feet higher than they are today. Over millions of years the mountains eroded sending thick layers of minerals, soils, and silt into the western half of town and the Connecticut River Valley. Deposits were augmented by other eroded materials carried from the north by massive glaciers during successive ice ages.

For several thousand years following the last Ice Age, the flow of the Connecticut River was blocked by a dam of glacial debris near what is now Middletown, Connecticut. A large lake, referred to as Lake Hitchcock, covered the Connecticut River Valley. Lake Hitchcock existed along a delta of sediment deposited at what is today Rocky Hill, Connecticut, and its northern end 200 miles north to St. Johnsbury, Vermont. This lake drained over a relatively short period of time and the water cut a new escape through the hills south of Middletown. The silt that accumulated in Lake Hitchcock and the materials that eroded from the eastern uplands contributed to large areas of prime and important agricultural soils in Ellington's farm belt.



Lake Hitchcock

Bedrock Geology

The bedrock geology in Ellington is made up primarily of Brownstone, also referred to by geologists as arkose (*Bedrock Geology Map available at www.cteco.uconn.edu*). This sedimentary rock most likely originated from the deposits of the many streams that flowed from the Eastern and Western Uplands of Connecticut millions of years ago. According to the Bedrock Geological Map of Connecticut, Ellington's bedrock is largely composed of arkose, gneiss, schist, and amphibolite. Of some interest are a few exposures of bedrock on Soapstone Mountain in Ellington.



Soapstone Mountain

Soapstone Mountain was the first land purchased for the Shenipsit State Forest. It was purchased in 1927 for the purpose of building a fire lookout tower. Since the 20's over 7,000 acres of land has been added around the summit in Ellington, Somers and Stafford.

Surficial Geology

The surficial geology in Ellington is a product of glaciation. Glacial and postglacial deposits overlie the bedrock surface (*Surficial Materials Map available at www.cteco.uconn.edu*). Glacial ice-laid deposits known as tills, consist of a non-sorted mixture of materials ranging from large coarse boulders to fine deposits such as silt or clay. Glacial meltwater deposits, known as stratified deposits, were laid down in glacial streams, lakes and ponds which occupied the lowlands of Ellington as the last ice sheet melted. Stratified deposits are generally found in the form of sand or gravel uniform in size and have few large stones and boulders. The difference between the composition of till and stratified deposits is important as subsurface water travels very well through stratified deposits, but not very well through

till. Geologists look to areas with large stratified deposits to identify potential sources of ground water for public consumption. These areas are important natural resources and have been the focus of aquifer protection regulations in recent years.

Postglacial sediments, primarily floodplain alluvium and swamp deposits, are less widely distributed. Areas west of Route 83 in Ellington, like portions of the “Great Marsh” and areas abutting the Hockanum River, are composed of alluvium and swamp deposits.

B. SOILS

Wetland Soils

In Connecticut wetland soil is defined by soil type. Wetlands is land, including submerged land, consisting of soils designated as poorly drained, very poorly drained, alluvial and flood plain by the National Cooperative Soils Survey of the Natural Resources Conservation Service of the US Department of Agriculture (NRCS). Wetlands generally fit into one of four categories: marshes, swamps, bogs, and fens.

Marsh land is periodically saturated, flooded, or ponded with water and characterized by herbaceous (non-woody) vegetation adapted to wet soil conditions. Generally, the water table in a marsh is at or above the ground surface throughout the year.

Swamps are watercourses distinguished by the dominance of wetland trees and shrubs. Swamps contain very wet soils during the growing season and standing water during other times of the year.

Bogs are watercourses distinguished by evergreen trees and shrubs underlain by peat deposits, poor or very poor drainage, and highly acidic conditions.

Fens are low, shrubby vegetation on saturated but not flooded soils. Fens, unlike common wetlands, depends on two specific criteria: 1) they must sit on an area of calcareous bedrock, usually limestone or marble, and 2) must be fed by groundwater from subsurface seeps or surface springs. Fens are unique wetlands and there are only a few known in Connecticut. There are no known fens in Ellington.



Cattails
Common Marsh Plant



Skunk Cabbage
Common Swamp Plant



Water Willow
Common Bog Plant



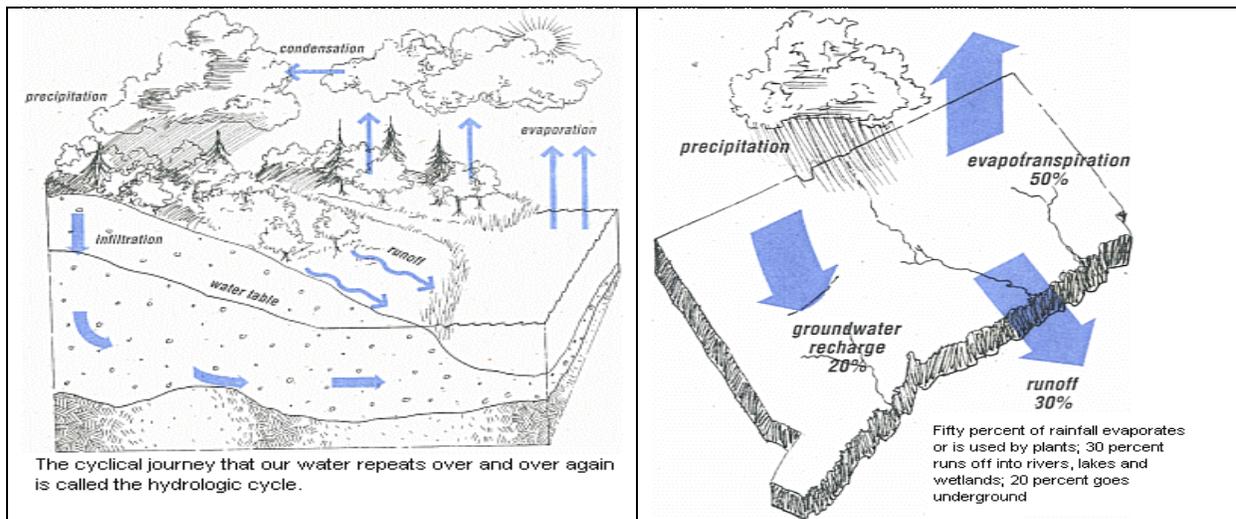
Brown Sedge
Common Fen Plant

The Department of Energy & Environmental Protection (DEEP) as well as the U.S. Army Corps of Engineers (USACE), lists 13 important functional values of wetlands as follows:

1. Groundwater recharge/discharge
2. Floodwater storage
3. Fish habitat
4. Sediment retention
5. Nutrient removal/retention/transformation
6. Production export
7. Sediment and shoreline stabilization
8. Wetland wildlife habitat
9. Recreation
10. Educational/scientific value
11. Uniqueness
12. Visual/aesthetic quality
13. Threatened and endangered species habitat

Not all wetlands perform all functions nor do they necessarily perform functions equally well. Nevertheless, wetlands are essential in both maintaining and improving water quality.

A function of wetlands is the distribution and circulation of water above, on, and below the earth's surface; the cyclical journey that water repeats over and over is called the hydrologic cycle. Water quality functions include reduction of the velocity of flow, ground-water recharge, and influence on atmospheric processes. Hydrologic functions are those related to quantity of water that enters, is stored, or leave a wetland.



Hydrologic Cycle

In Ellington, there are approximately 2,744 acres of wetland soils and 490 acres of waterbodies for a total of 3,234 acres of wetlands and watercourses comprising 14.7% of the town. There are about an additional 7,422 acres in the upland review area (sometimes referred to as the wetlands buffer area) which comprise an additional one third of the town. The general location of wetland soils, waterbodies, and upland review area is available online at ellingtonct.mapgeo.

Prime and Statewide Important Farmland Soils

Prime farmland is defined by the NRCS as “land that has the best combination of physical and chemical properties for producing food, feed, forage, fiber and oilseed crops, and is also available for these uses.” Prime farmland has the properties to generate high yields of crops when treated and managed according to modern farming methods. Statewide important farmland soils are nearly all prime farmland and also produce high yields of crops.

Statistics indicate that the quantity of farmland, and consequently the quantity of prime and important farmland soils, has been rapidly decreasing in the State. According to University of Connecticut Cooperative Extension System, farmland has decreased from almost 50% to only 11% of the State’s total land area since 1950. Ellington is committed to keeping farmland an integral part of community character, and established of formal farmland preservation program enabling the town to partner with state and federal agencies to permanently preserve farmland. In 2007, electors approved a 2 million dollar bond authorization for the purchase of development rights for farmland in exchange for a permanent easement ensuring farmland soils are retained in perpetuity. As of adoption of this report, there’s about 1,054 acres of farmland approved for perpetual preservation in Ellington. There’s over 5,000 acres of active agricultural land, approximately 25% of Ellington’s total land area.

Most of the western lowlands of Ellington, generally the land west of Route 83 and known as the Western Farm Belt, is designated as having prime farmland soils and statewide important farmland soils. The general distribution of these soil types is illustrated online at ellingtonct.mapgeo.com.

Soil Potential for Subsurface Sewage Disposal

Understanding what areas of the town have soils suitable for installing a single family residence subsurface disposal system, commonly referred to as a residential septic system, is important in planning development. Assistance with rating soil potential for septic systems can be obtained through North Central District Health Department, and illustrated on Potential For Subsurface Sewage Disposal maps located at cteco.uconn.edu and websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. The type of soil gauges the extent of soil limitations that must be overcome to meet Connecticut and local health code regulation when siting residential septic systems.

C. WATER RESOURCES

Water resources include watercourses, water bodies, watersheds, and aquifers. Crystal Lake and Shenipsit Lake, are major water bodies in Ellington. Some of the smaller water bodies are Sadds Mill Pond, Cigar Pond, Abbey Pond, Charters Pond, Moody Pond, Minor Pond, and Ladds Pond. The Hockanum River, Willimantic River, Broad Brook, Muddy Brook, Bahlers Brook, Kibbes Brook, Creamery Brook, Pecks Brook, Ketch Brook, Pinney Brook, Abbey Brook, Hydes Brook, Charters Brook, Kimballs Brook, Martins Brook, Belding Brook, Turkey Brook, Davis Brook, Shenipsit Lake Brook, Abby Brook, Bonemill Brook and White Lot Brook are watercourses flowing through Ellington. These water features are fed by a network of tributaries and are best defined by the watersheds that supply them.



Crystal Lake

Shenipsit Lake ("The Snip") is a natural lake used as a water storage facility reservoir, for the Hockanum River. The Snip is 522.8 acres and borders Ellington, Tolland, and Vernon, Connecticut. The Shenipsit Lake Association ("SLA"), a not-for-profit organization, was established in 1990 to help keep Shenipsit Lake open and available for all people to enjoy. The Snip offers bass and trout fishing, and SLA sponsors fishing from boat or shore and several fishing derbies each year: boat fishing is limited to those registered and stored on premise. There's five and a half miles of hiking trails around The Snip amidst beautiful woods and natural scenery customary in rural New England. Trails are mostly flat, well maintained and easily accessible from Route 74 and Shenipsit Lake Road.



Shenipsit Lake

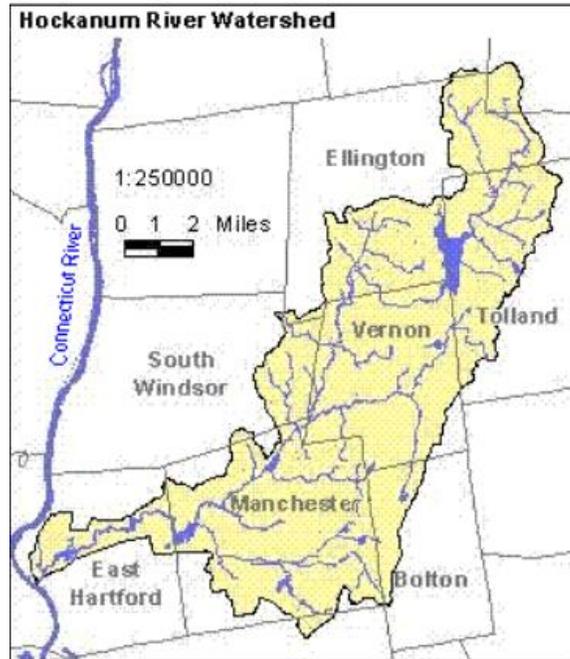


Hockanum River

Subregional Watersheds

A watershed is defined as all the land and waterways that drain into the same body of water. All the surface water that drains Ellington's 34.4 square miles begins its flow at the highest point of one of ten subregional watershed basins. Watershed maps are available at cteco.uconn.edu, clear.uconn.edu, and ellingtonct.mapgeo.

Of the ten subregional watersheds within the town, two watercourses drain 16,128 acres or 72.9% of the town's land area: the Hockanum River and Broad Brook.



Hockanum River Watershed

A public water supply watershed and reservoir are located within the boundaries of Ellington. The public water supply watershed drains to Shenipsit Lake Reservoir which is owned and managed by the Connecticut Water Company. This lake is a critical water supply source for north central Connecticut.

Watersheds define the natural drainage systems in Ellington. Rivers, brooks, lakes, ponds, wetlands and floodplains are the attributes of the watershed that sustain private and public drinking water sources, support a variety of plant and animal life, and mitigate flood conditions. Managing watersheds in a sustainable manner is vital to ensure the attributes they contain and the benefits they provide will be around for years to come.

Floodplains

A floodplain is a relatively flat low-lying area adjacent to a river or stream which is subject to flood events and is formed mainly of sediment deposits. The Federal Emergency Management Agency (FEMA) has delineated zones of Special Flood Hazard Areas (SFHAs), and in some cases the Base Flood Elevations (BFEs) within the town. 100 Year Flood Zones indicate that there is 1 out of 100 chances that the area will be flooded every year, while 500 Year Flood Zones indicate that there is 1 out of 500 chances that the area will be flooded every year. General Flood Zone data is available online at cteco.uconn.edu and ellingtonct.mapgeo.

Floodways are those areas within the floodplain that convey the floodwaters. FEMA defines the regulatory floodway as “the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.” Therefore, the town must regulate development in these floodways to ensure there are no increases in flood elevations.

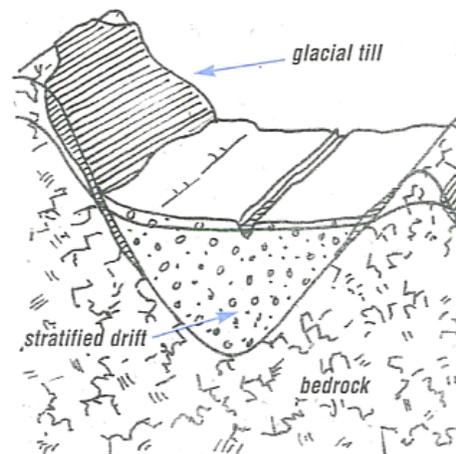
In 1982 the Ellington Zoning Regulations were amended to include a Flood Plain District. The purpose of the regulation is to promote the health, safety, and general welfare and to minimize losses due to flood conditions in specific areas by:

- Restricting or prohibiting uses dangerous to health, safety, and property due to water or erosion due to flood heights or velocities;
- Require uses vulnerable to floods, and facility which serve those uses, be protected from flood damage at time of initial construction;
- Control alteration of natural flood plains, stream channels, and natural protective barriers, which involve accommodation of flood waters;
- Control filling, grading, dredging, and other development which may increase erosion or flood damage; and,
- Prevent or regulate construction of flood barriers that will unnaturally divert flood waters or may increase flood hazards to other lands.

The FEMA Flood Map Service Center (MSC) is an official public source for flood hazard information produced in support of the National Flood Insurance Program (NFIP). Reviewing changes to flood maps, when available, is important to understanding the most up-to-date and effective information on flooding hazards and risks in your area. FEMA flood maps are continually updated through Letters of Map Change (LOMC) - a letter which reflects an official change to an effective Flood Insurance Rate Map (FIRM). LOMCs are issued in response to a request of FEMA to revise or amend its effective flood map to remove a property or reflect changed flooding conditions on the effective map. Two basic types of LOMCs include Letter of Map Amendment (LOMA), a written amendment documenting flood hazard details, and Letter of Map Revision (LOMR), a document displaying an area of the effective map revised to reflect newer information made available after the flood hazard zones where mapped initially. Since 2012, a list of accepted LOMCs have been published on FEMA's website and available at msc.fema.gov.

Aquifers

While groundwater can be defined simply as water lying below the surface of the ground, an aquifer is more specifically defined by the CT DEEP as "any geologic formation that allows for the withdrawal of useable amount of water". In most cases, the use of this water involves a water supply for human consumption.



Cutaway view of principal aquifers

Ellington has two (2) public water well fields operated by the Connecticut Water Company (CWC) and several private community well fields serving residential developments. Approximately half of Ellington homeowners get their drinking water from individual wells.

A small amount of hazardous material if improperly stored or disposed of, can result in substantial damage to underground aquifers as well as above ground water resources. CT DEEP has identified twenty-seven (27) contaminated or potentially contaminated sites in Ellington. Most of these sites involve leaking underground tanks.

In 2010, the State legislature passed legislation requiring eighty (80) towns within the state to adopt aquifer protection regulations and create an aquifer protection commission. These towns have aquifer resources meeting specific state defined criteria. Under the law, water companies with public wells in those affected communities are required to prepare detailed maps of recharge areas. Although Ellington has significant aquifer resources, it does not have large sand and gravel aquifers as defined under State law and therefore is not required to adopt aquifer protection regulations under this law. However, this does not mean that groundwater resources in Ellington are less vulnerable to contamination or are not significant enough to still merit added protection.

The Ellington POCD outlined strategies the town may wish to consider to further protecting these resources. The town could consider adopting a more modest version of the state's aquifer protection program. A study to map recharge areas could be undertaken in partnership with the CWC. In addition to recharge areas associated with public well fields, all significant aquifers should be identified. These areas would be used as the basis to define an overlay protection zone. The Planning and Zoning Commission could adopt regulations which either prohibit or place restrictions on certain land uses within this zone which pose the greatest threat to ground water resources. Alternatively, the commission could reference a set of best management practices to be implemented in connection with any application seeking site plan approval within the overlay zone.

D. FORESTED LAND

According to the CT DEEP, forests cover nearly 60% of Connecticut, making it one of the most forested states in the country. The trees and forests of Ellington add immensely to the quality of life for the people of the town. They filter the air, safeguard private and public drinking water sources, produce locally grown forest products, provide essential habitat for wildlife, moderate summer and winter temperatures and provide recreational opportunities.

The Ellington POCD recommends a selective tree harvest program based on a plan prepared by a licensed forester to benefit long-term health of the forest.

The state owns significant parcels of open space which are forested within the town comprising approximately 1,850 acres, and land trusts and town lands add approximately 300 acres each of additional forested lands. In fact, these protected areas account for 2,450 acres or 12% of the land in Ellington. Forested lands cover 10,604 acres or approximately 48% of Ellington. The distribution of the town's forested lands is illustrated online at *ellingtonct.mapgeo and noaa.gov*.

E. SIGNIFICANT HABITATS AND STATE LISTED SPECIES

Ellington has abundant diversity of plant and animal life. Ellington is a rural-suburban town with the majority of densely developed land clustered along the southern portions of town and along major thoroughfares. The northern segments of town and the eastern panhandle include a mix of farmland and forested areas. The combination of varied topography, forested tracts, numerous rivers, streams, lakes, and ponds provide exceptional habitat for a variety of plants and animals.

Endangered, Threatened, and Special Concern Species

In Connecticut, the protection of unique biological communities is held to a high standard. In support of this, the CT DEEP has inventoried sites across the state that contain habitats of endangered, threatened, and special concern species. These habitat areas are perceived as unique and receive special protection status from the state. The state has identified these sites in a special survey called The Connecticut Natural Diversity Database (NDDDB). The NDDDB is a centralized inventory of unique habitat locations and represent the findings of years' worth of biological surveys.

The NDDDB breaks down sites into the following taxonomic groups: mammals, birds, reptiles, amphibians, fish, invertebrates and plants. Within these groups, the species are further categorized as being endangered, threatened, or special concern. According to Connecticut Public Act 89-224, these categories are defined as follows:

- “Endangered Species” means any native species documented by biological research and inventory to be in danger of extirpation throughout all or a significant portion of its range within the state and to have no more than five occurrences in the state, and any species determined to be an “endangered species” pursuant to the federal Endangered Species Act.
- “Threatened Species” means any native species documented by biological research and inventory to be likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range within the state and to have no more than nine occurrences in the state, and any species determined to be a “threatened species” pursuant to the federal Endangered Species Act, except for such species determined to be endangered by the Commissioner (DEEP) in accordance with section 4 of this Act.
- “Species of Special Concern” means any native plant species or any native non-harvested wildlife species documented by scientific research and inventory to have a naturally restricted range or habitat in the state, to be at a low population level, to be in such high demand by man that its unregulated taking would be detrimental to the conservation of its population or has been extirpated from the state.

Information from the state’s database was transcribed onto maps, represented by circles a half mile in radius. These sites, commonly referred to as “blobs,” are represented ambiguously because of the many threats they face. These threats include collection, because of their beauty, uniqueness or purported medical or economic values. Even well-intended observers and photographers have been known to accidentally destroy sites.

The location of blobs are illustrated on a map titled Natural Diversity Data Base Areas, Ellington, CT, and available online at depdata.ct.gov and ellingtonct.mapgeo. In addition to generalizing the exact location of these sites, the category in which the sites are located has also been removed. This is to further ensure the protection of these unique resources.

The NDDDB information is updated every two years. Development applications should be compared to current NDDDB information and any project located within a NDDDB buffer area should submit a formal request for project review to the CT DEEP as part of local approval.

As part of this study, the CT DEEP reviewed NDDDB for Ellington and found state-listed species documented nearby. A list of species has been provided, including selected management recommendations, where available. The CT DEEP NDDDB Determination is attached (Appendix A). The documented species include:

Birds:

- Sharp-shinned hawk
- Broad-winged hawk
- Whip-poor-will
- Bald Eagle
- Savannah sparrow
- Brown thrasher

Herps:

- Spotted turtle
- Wood turtle
- Smooth green snake

Fish:

- Consult with a CTDEEP Fisheries Biologists for more information

Plants:

- Consult with a plant ecologist for more information

Hockanum River Bird Documenting Survey

In 2019, student and commission volunteers conducted a survey of birds along the Hockanum River, the survey is attached an appendix (Appendix B).

Wildlife Corridors

Wildlife corridors are contiguous segments of land that create a link between animal habitats by providing transportation routes for animals to use to reach breeding grounds or forage areas. Many wildlife corridors include riparian zones that line rivers and streams and include both undeveloped and partially developed areas. In some cases, land that comprise wildlife corridors are privately owned and vulnerable to development or activities destructive to wildlife and their ecology.

Wildlife passageways are important to avoid isolation and eventual extinction of plant and animal populations. The biological integrity of a species is also dependent on the interconnectivity of wildlife habitat to ensure diversity of species and avoid population “islands,” which are subject to inbreeding and the detrimental effects this has on the genetics of the species.

In Connecticut, there is no formal inventory of wildlife migration routes that could be used to identify existing wildlife corridors. As a result, we must attempt to infer the wildlife migration patterns. This is a difficult assignment due to variables such as land use (undeveloped land), proximity to protected open space, presence of streams, ridge tops, wetlands, and/or forested lands, and proximity to “sensitive areas of special concern.” The caveat is that these potential areas require additional scientific study to further refine their boundaries.

Riparian Corridors

According to the Center for Land Use Education and Research (CLEAR), “Riparian” refers to the area by the banks of a river, stream, or other body of water. A riparian corridor or zone is a strip of land of a specified width along rivers, streams, and other waterways.

Riparian corridors with native vegetation and soils provide multiple functions and values. They are the first line of defense against the impacts of impervious surfaces. Riparian buffers protect water resources by improving water quality through filtering pollutants and sediments, stabilizing stream banks and river beds, provide habitat and corridors for wildlife, and shade waters for fisheries enhancement.

There is no one generic buffer width that will keep water clean, stabilize banks, protect fish and wildlife habitat, and satisfy human demands on the land. To protect wildlife habitat and provide wildlife corridors along waterways, the recommended buffer width varies depending upon the desired species. The United States Forest Service, in a publication titled “Riparian Forest Buffers-Function and Design for Protection and Enhancement of Water Resources,” suggests a minimum buffer of 95 feet, which is composed of three zones: Zone 1 begins at the top of the stream bank and occupies a strip of “undisturbed forest” of 15 feet. Zone 2 begins at the edge of zone 1 and occupies an additional 60 feet of “managed forest.” Zone 3 is composed of 20 feet of natural or controlled grazed grassland whose main function is to control runoff. The 95-foot buffer is a minimum, and actual widths vary depending on 1) the nature of the stream protected; 2) soils, topography and vegetation; and 3) land use of concern that may impact waterways. Mandating a minimum buffer is not feasible for the entire town, but it’s feasible to implement some level of riparian zone in undeveloped portions.

III. CONCLUSION

The natural resource inventory presented here represents the general natural attributes of Ellington that are important to preserve. This report should be used in conjunction with the POCD & Plan of Conservation, as amended from time to time. The next step in the planning process is to conduct an open space inventory and to prioritize resources and develop strategies to help protect them for years to come. This is done through careful assessment of the open space priorities of the town and clear articulation of those priorities through identification of goals and objectives.

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