

Natural Resources Inventory

Town of Kensington, New Hampshire



March, 2014

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Natural Resources Inventory**

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Prepared by the Kensington Conservation Commission, with assistance from the Rockingham Planning Commission
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A. Introduction

I. Overview of Kensington's Natural Resources by resident naturalist and wildlife biologist George Gavutis

PRE-COLONIAL TIMES - The area we now know as Kensington was endowed with an abundant diversity of natural resources. Magnificent forests and plentiful, clear streams and other important wetland types, fed by high quality, shallow, glacially deposited, gravel aquifers that supported a great variety of valuable species of flora and fauna.

In pre-colonial times, Kensington looked a lot different than it has since. We can assume that, except for the primary wetlands and immediately adjacent uplands, it was entirely forested, and dominated by a typical mix of mostly mature, and huge, American chestnuts, oaks, white pines and hemlocks.

Due to the presence of abundant beaver colonies and their numerous dams, the wettest ground adjacent to the small stream and brook channels would most likely have been dominated by submerged aquatic plants like pondweeds; and emergent plants including cattails and water lilies. The shallower, peripheral areas, that were only seasonally-flooded, would have graded into rushes and sedges. The adjacent uplands, within 100 yards or so of the upland edge, would have contained channels dug into the lower ground by the beavers and leading to their skid trails extending hundreds of feet into the woods. The vegetation in the peripheral upland zone would have been dominated by a wide variety of shrubs and small trees and their sucker-sprouts. Most common species would have included alders, willows, dogwoods, aspens, blueberries, viburnums, and birches, with sedges and grasses and flowering plants pioneering the most frequently disturbed areas, in the vicinity of the beaver skid trails. The forested wetlands component would have been considerably reduced in size compared with today, due to the much higher water table maintained by the beavers in most years. The forested wetlands, would have been dominated by dense stands of Atlantic white cedar, along with a scattering of hemlock, red maple and black gum trees.

The thriving beaver colonies, with their ponds surrounded by a broad band of early-successional habitat provided "critical edge" vegetative habitat for a tremendous diversity of other wildlife species. It also provided an essential niche for a large number of specialized plants and insects—many of which today have either been extirpated; are threatened or endangered; or are in serious decline. Some of the more noteworthy species that were undoubtedly common in and around beaver ponds and their periodically reverting meadows, shrublands and forests, during the breeding season would have included waterfowl, such as wood duck, black duck, green and blue-winged teal and hooded merganser; water birds, such as pied-billed grebe, common moorhen, and probably American coot; marsh birds, such as Virginia, sora and king rail; wading birds, such as great-blue, green-backed and black-crowned night heron, and American and least bittern; songbirds, such as marsh, sedge and winter wren;

golden-winged warbler, American redstart, alder and willow flycatcher; game birds, such as American woodcock, ruffed grouse, wild turkey and probably bobwhite quail; raptors, such as red-shouldered hawk, northern harrier, osprey, bald eagle, kestrel, merlin, screech and saw-whet owl; mammals, such as muskrat, mink, weasel, otter, fisher, New England cottontail, snowshoe hare, gray fox, bobcat, black bear, moose, white-tailed deer, elk, wolf and panther; reptiles and amphibians, such as black racer, wood, Blanding's and spotted turtle, blue spotted and red backed salamanders; insects, including myriads of moths, butterflies, dragonflies, beetles, etc.; plants such as the small crested sedge, Loselle's twablade orchid, bitter cress, equisetum and the usual vast array of indigenous marsh, swamp and early-successional species.

If this list was expanded to include all the migratory bird species present in the wetlands during the rest of the year, especially during the spring and fall, as well as all the other year-round species of animals and plants, the list would be far more extensive. Then, of course, there were the extensive, upland forests, where their cadre of wildlife and plants would easily expand Kensington's species lists to number in the thousands. There was probably also a substantial list of species of all types, which have since either become locally extirpated or went totally extinct that we may never even know about.

Although the beaver was probably the primary species responsible for early- successional habitat manipulation and management in this area, Native Americans also had some impact on habitat. This would have primarily been thru the creation of small forest openings, often near water, for campsites and agriculture. Wildfires were also used by them to improve habitat and drive selected prey species like deer & rabbits etc. They may also have used fire to clear large blow down areas and dead timber caused by severe weather events and insect or disease outbreaks to ease their movement from place to place.

COLONIAL TIMES THRU THE 1800's - With European colonization, everything changed. Wetlands were drained to produce "foul meadow" hay, grazing for domestic animals, and, eventually, in attempts to control mosquitoes. They were also filled to increase building sites and dumps when the accepted phrase was "wetlands are wastelands". Most of the forests were cleared to accommodate intensive subsistence agriculture, including sheep farms, provide building materials and sites for residential and commercial development, and for firewood, box building, shipping materials and charcoal. Estimates of remaining forest habitat in this area were less than 10%, mostly in small, scattered woodlots. Many species of wildlife were directly extirpated for their furs or feathers, and for food for the increasing human population. The beaver were extirpated for those same reasons and also for their interference with human endeavors. Large predators were eliminated to alleviate human fear & competition for food. Many other species were imperiled by the radical & rapid habitat changes/losses. Then, within a couple centuries, most farms in this area were being abandoned as populations moved west and habitat began to revert back to brush and saplings.

THE 1900's TO THE PRESENT – Second growth forests began to re-grow, creating a temporary boom in early-successional habitat. This era was short-lived though and in many cases monotypical stands of very poor habitat and growth-form white pine (pasture/wolf pine)

quickly dominated. Because the beaver and most functional wetlands were still gone, those pine stands quickly overwhelmed and usurped most of the zone that had historically been the realm of the critical habitat needed to sustain both the beaver, and all the other species that had evolved with it. At the same time, wetlands were continuing to be drained and filled and replaced by unprecedented industrial, commercial and residential development.

In the process of mining gravel for road construction etc., streams supporting the cold-water dependent, native brook trout were exposed to direct (warming) sunlight and siltation. Gravel mining regulations were implemented to prevent siltation of adjacent streams and dredging below the surface of the groundwater, exposing the groundwater aquifers to airborne pollutants and other abuses. But there was a lack of enforcement, and by the 1980s, two “lakes” had been formed on the east side of the town. Those man-made water bodies replaced our largest natural water body, Muddy Pond, as the largest one(s) in town. The final insults before the practice was finally curtailed were : (1) the removal of the gravel “island” pinnacle that supported the granite monument that delineated the three corners where Kensington, Seabrook and South Hampton met; (2) the abandonment in the water, of leaking and rusting excavating equipment and materials; and (3) the drainage of a silt detention pond in the Dow’s gravel pit area into the prime, gravel, brook trout, spawning habitat in Winkley Brook, which ruined that section of the brook for at least the next decade.

By the mid 1900’s, however, human attitudes were beginning to change, and the real impacts of what “civilization” was doing to the environment began to register. Decimated wildlife populations were finally protected by the Federal and State governments. Most species were classified as “non-game” and fully protected, permanently. “Game” and “furbearer” species were allowed to recover before limited hunting & trapping seasons were established. Nationally, public and private lands were set aside as National Wildlife Refuges and Sanctuaries, Parks and Wildlife Management Areas. The important, intrinsic values of wetlands were finally realized and laws were passed to curb their losses. Pesticide use became widely restricted and regulated. Finally, wetland restoration was initiated.

Kensington and other towns established Conservation Commissions and began to accept gifts of land and conservation easements from enlightened landowners who wanted to see that our town preserved it’s rural character and provided the open space that wildlife required to thrive and our citizens needed to maintain our quality of life.

All these things have helped lead us to where we are now. With the help of some judicious transplants by State and Federal wildlife agencies, and natural re-occupation of suitable habitats by species that managed to hold on in remote and secluded places, deer, moose, snowshoe hare, beaver, otter, wild turkey, fisher, bobcat, hawks, eagles owls, and maybe panther, along with many other species have made a strong and amazing comeback with-in just the last few decades. Since the wolf has not yet returned here, northern coyotes from Canada have expanded into New England to fill that predatory niche. The coyotes have begun increasing in numbers, in just a few decades, and also now form hunting packs, just like wolves used to do.

Continued development in the region, coupled with habitat adaptation forced by climate change, will result in more changes to Kensington's natural resources. Conserving undeveloped land and associated habitats will provide some measure of protection for the resources on which wildlife and humans rely. It is the hope of the Kensington Conservation Commission that this Natural Resources Inventory will provide information that will lead to action.

II. Purpose of the Natural Resources Inventory

The purpose of this Natural Resources Inventory (NRI) is to:

- Map and describe significant natural resources in Kensington;
- Identify areas of high ecological value at the local, regional, and state level;
- Recommend options for the protection and management of natural resources in Kensington;
- Incorporate relevant reports and studies regarding natural resources in Kensington into one document.

Like all communities, Kensington is faced with the challenge of finding a balance between growth and economic development and the protection of the significant natural resources in the community. The rural and historic character of Kensington in combination with streams, brooks, ponds, forests, and farms provides a high quality of life for residents and an excellent habitat for native plants and animals.

Many communities, including the residents of Kensington, have acknowledged the impacts posed by growth and development and the need to conserve land for open space, food supply, recreation, wildlife habitat, and the protection of surface and groundwater quality and quantity. One example of this acknowledgement can be found in the 2011 Kensington Master Plan, which includes the following vision statements that are the result of a community forum:

- Protect Kensington's water, forested land, farm and historical assets;
- Enhance and promote agricultural activities in town as part of Kensington's rural fabric;
- Protect aquifers and drinking water sources in town from overuse and potential contamination;
- Create and connect a multi-use pedestrian friendly trail system;
- Conserve key parcels of land for recreation, wildlife habitat and agriculture;
- Foster community-based agriculture (i.e. community farms, local farms);
- Preserve rural community character defined by natural, historical, cultural and architectural assets.

The Master Plan goes on to make several other statements regarding natural resource protection, including:

“The Kensington Planning Board believes the central role of planning is to ensure the long term value and sustainability of the environment that maintains choices for future generations. There exists a need to direct future development in ways that conserve land and open space, protect water resources and wildlife habitats.”

Given these statements of support for natural resource protection by Kensington residents, the Conservation Commission has developed this Natural Resource Inventory to guide and support natural resource protection in town.

III. Description of Land Use in the Town of Kensington

The Town of Kensington is located in Rockingham County and encompasses 12.0 square miles or 7,668 acres of land area, of which 11.9 square miles is land and 0.1 square miles is inland water area. Kensington is home to 16 named hills of glacial drumlin origin; the highest, Indian Ground Hill, located on the town’s border with South Hampton, is 305 feet above sea level. The majority of Kensington lies within the Piscataqua River watershed, via the Great Brook and Exeter River. The southeast portion of town drains to Hampton Harbor via Taylor River and Winkley Brook, which becomes the Hampton Falls River. The southwest corner of town drains to the Merrimack River via tributaries to the Powwow River.

Land use in Kensington is primarily rural residential development spread throughout town between forests and fields. Approximately 7,600 acres of land, 98%, is zoned residential/agricultural, currently requiring a minimum lot size of 2 acres for new development, as well as meeting conditions based on soil conditions. Commercial activity takes place in small pockets of town along Routes 108, 107 and 150. The formal Commercial/Industrial District is located at the intersection of Routes 150 and 107 in the southeast section of town. The intent of the district is to permit general commercial uses in areas on streets with high traffic volumes. The district encompasses 151 acres, 2% of the land area. It is important to note that the C/I District is positioned over an identified high yielding aquifer. Future consideration of this aquifer and the type of commercial uses permitted should be carefully studied in order to protect this valuable drinking water resource. Residents have expressed a desire, in the Master Plan, to maintain the rural character of the town. Map 1 displays 2010 Land Use in Kensington.

The character of Kensington is perhaps best defined by the large amount of undeveloped land throughout town. This is due to a number of factors, including wetland soils that restrict development, large parcels of former farmland that are no longer actively farmed, and the State’s Current Use tax program that reduces property tax on undeveloped land. A review of property tax cards in 2011 revealed that approximately 126 properties were enrolled in Current Use, totaling 4,065 acres, slightly more than one half of the town’s total acreage.

The US Census Bureau estimates the 2010 population to be 2,124. The population grew 12.2 % between the 2000 and 2010 Census, almost doubling the average growth in Rockingham County for that period of 6.4%

Table 1
Kensington, NH Population
Source: US Census Bureau

Year	1960	1970	1980	1990	2000	2010
Population	708	1,044	1,322	1,631	1,893	2,214

Table 2 illustrates land use in Kensington in 2010.

Table 2
Kensington Land Use 2010
Source: University of New Hampshire, Complex Systems Research Center

Land Use	Acres	% of town
Forest Land	3,927.8	51.2
Open Wetlands	892.1	11.6
Residential	1,069.9	14.0
Active Agricultural	1,072.2	14.0
Other/Idle	247.1	3.2
Water	50.2	0.7
Transportation	94.1	1.3
Utilities	99.1	1.3
Playing Fields/Recreation	44.8	0.6
Farmsteads	102.1	1.3
Commercial/Industrial	63.7	0.8
Mixed Urban	4.3	0.1
TOTAL	7,667.8	100

B. Natural Resource Features

I. Topography

Topography in Kensington does not vary greatly, with the highest elevation of 305 feet found at Indian Ground Hill on the southern edge of town. This type of topography is common in southeastern New Hampshire, where the hills are low and their sides generally not steep and the valleys are flat and often wetland. Like the rest of New England, Kensington was shaped by the movement of glaciers more than 10,000 years ago. The motion of the glaciers moved large amounts of rock and soil materials and smoothed the surface giving a more rounded appearance to the surface. However, the glacier also left us with coarse, stony and often infertile soils.

By combining knowledge of the physical environment with what is known of the distribution of plants and animals, the U.S. Forest Service has divided New Hampshire into the following three principal biophysical or ecological regions or sections:

- Southern New England Coastal Plain and Hills Section (southeastern part of NH);
- Vermont-New Hampshire Upland Section (southwestern part of NH);
- White Mountain Section (Northern part of NH).

Kensington is located in the Southern New England Coastal Plain and Hills Section which can be further divided into three subsections:

- Gulf of Maine Coastal Lowland (immediate coastal region);
- Gulf of Maine Coastal Plain (southern portion)
- Sebago-Ossipee Hills and Plain (northern portion).

Kensington is in the Gulf of Maine Coastal Lowland, a subsection characterized by broad, hilly plateaus and drumlins leading to the coastal zone. Map 11 highlights Kensington's topography.

II. Soils

Understanding the nature and properties of soils is critical to managing and conserving our natural resources. Through its Soil Survey Program, the Natural Resources Conservation Service (NRCS) studies and inventories soil resources across the country. Soil scientists make this study in order to determine what soils are present, where they are located and how they can be used. Soil surveys contain information in the form of detailed soils maps, data tables and text narratives that can be used in order to determine appropriate uses for the land. Soil surveys also contain predictions of soil behavior for selected land uses and highlight limitations and hazards inherent in the soil and the impact of selected land uses on the environment. The latter is especially important in Kensington because all development relies on on-site wells and septic disposal.

It is important to note that these soil survey maps are designed for general planning purposes and are not at a scale appropriate for site specific use. A site specific soils map should be done by a licensed professional soil scientist wherever there are concerns about the capability of the land for development.

The most recently published edition of the Rockingham County Soil Survey was issued in 1994. This information has been digitized into a GIS (geographic information systems) map by the Rockingham Planning Commission at the end of this report.

- Prime Farmland Soils – These soils are defined by the US Department of Agriculture as having the best combinations of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops, and are also available for these uses. Prime

farmland produces the highest yields with minimal expenditure of energy and economic resources, and farming it results in the least damage to the environment. According to aerial photos analyzed by the University of New Hampshire Complex Systems Research Center, there are 1,483.7 acres of prime farmland in Kensington, 19 % of the total acreage.

- Soils of Statewide Importance – This is land, in addition to prime farmland that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are determined by the NH Department of Agriculture. Generally, these soils are nearly prime farmland that can economically produce high yields of crops when treated and managed according to acceptable farming methods. There are 1804.9 acres of soils of statewide importance in Kensington, 23% of the total acreage.
- Wetlands Soils - These soils include Very Poorly (Hydric A) and Poorly Drained (Hydric B) soils. The areas are wet, since water moves through the soil so slowly that the water table remains at or near the surface of the ground for the greater part of the year. The reference to “very poorly” and “poorly” refers in part, but not exclusively to, the amount of time water remains at or near the surface. Very poorly drained soils generally occupy level or depressed sites, are frequently ponded, and commonly have soils with a thick dark colored surface layer and gray subsoil. Poorly drained soils occupy nearly-level to sloping sites, are ponded for short periods, have a dark colored surface layer with grayish, mottled subsoil. There are 1,059.5 acres, 13.8%, of very poorly drained soils (Hydric A), and 1,156.2 acres, 15.1% of poorly drained (Hydric B) soils in Kensington. Wetlands are discussed in greater detail in the Water Resources section of the NRI.
- Sand and Gravel Deposits – There are two currently active sand or gravel pits in Kensington, one on Osgood Road and the other on Route 150, Amesbury Road.

Recommendations for Protecting Soil Resources:

Soils determine how land should and should not be used. It is important that land use decisions be based on accurate soils information.

- Identify and map prime wetland soils to increase protection of highest functioning wetlands in Kensington.
- Research and implement mechanisms for greater protection of prime agricultural soils.
- Assure code enforcement is in place to determine soil analysis and mapping are accurate and setback distances are adhered to,

III. Fresh Water Resources

A. Watersheds

A watershed is the geographic area of land that drains surface waters to the lowest point, such as a river, lake, bay or ocean. The network of rivers, streams, and other tributaries is collectively known as the drainage system of a watershed.

Kensington lies within two main watersheds, the Piscataqua River/Coastal watershed which drains the northern and eastern sections of town and the Merrimack River watershed which drains the southeastern section of town. Kensington's northern brooks (Great, Mill and York) merge in the Great Meadows area, and join the Exeter River that flows to Great Bay. The drainage from Yorkfield Farm, east of Drinkwater Road, flows north thru "The Cove" area in Hampton Falls and ultimately also joins the Exeter River/Squamscott River, flowing into Great Bay and out into the Atlantic Ocean. A little further south, the Taylor River headwaters area east of Drinkwater and Wild Pasture Roads flows to the east, to the Hampton/Seabrook Harbor estuary. The southeastern-most corner of town is drained by Winkley Brook and its tributaries and it too flows to the Hampton/Seabrook Harbor estuary via the Hampton Falls River. Most of the rest of the southern-most part of town drains south into the Powwow River which flows to the Merrimack River in Amesbury, Massachusetts. The western-most part of town drains to the west into the headwaters of Great Brook in East Kingston, and ultimately back into Kensington in the Great Meadows, and then into the Exeter River. Map 3 displays Kensington's water resources.

B. Surface Water Resources – Rivers, Streams, Ponds, Vernal Pools, Wetlands

Kensington's fresh water resources consist of a hydrologically connected system of rivers, streams, brooks, ponds, wetlands, vernal pools, and groundwater. The Town's surface and groundwaters are intricately interconnected. In some locations and under some conditions, the surface waters recharge the groundwater and in other locations and conditions, the groundwaters feed our rivers, ponds, wetlands and streams and keep surface waters flowing even during droughts. The quality and quantity of one can significantly affect the other.

Buffers, land alongside rivers, streams and ponds, should be left in a naturally vegetated state to protect water quality and wildlife habitat. Vegetation growing along the shore filter pollutants from runoff, promoting groundwater infiltrations, and stabilizing stream banks to control erosion.

It is important to note that the buffer should be wider if the adjacent land is sloped, the land use is intensive, the soils are erodible, the land is a floodplain and/or if the stream or river naturally meanders.

The quality of water and habitat in rivers and streams depends upon surrounding land uses and management practices. Sediment from erosion destroys spawning habitat and fills stream beds. Removal of trees and other streamside vegetation raises water temperatures and can destroy habitat for trout and many other species upon which fish depend.

Water quality in both the Exeter River and the Powwow River has been monitored annually since 2006 by volunteers in conjunction with the NH Department of Environmental Services Volunteer River Assessment Program (VRAP). Annual reports with monitoring results may be found at the DES website:

<http://www.des.state.nh.us/organization/divisions/water/wmb/vrap/powwow/index.htm>.

<http://des.nh.gov/organization/divisions/water/wmb/vrap/exeter/index.htm>

Table 3
Waterbodies in the Town of Kensington
Ponds, Rivers and Streams

Ponds	Sub-Watershed Description	Watershed
York Pond	York Brook to Great Brook to Exeter River	Piscataqua
Philbrick Pond also known as Hobbs Pond	Moulton Brook to Hobbs Brook to Winkley Brook to Exeter River	Piscataqua
Lewis Pond	Winkley Brook to Hampton Falls River	Coastal
Gamelin Pond	Winkley Brook to Hampton Falls River	Coastal
Muddy Pond	Winkley Brook to Hampton Falls River to Hampton River to Hampton Harbor	Coastal
Gavutis Pond	Winkley Brook to Hampton Falls River	Coastal
Bailey Pond	Winkley Brook to Hampton Falls River	Coastal
Reflection Pond	Winkley Brook to Hampton Falls River	Coastal
Sawyer Pond	Winkley Brook to Hampton Falls River	Coastal
Briggs Brook	Back River to Powwow River	Merrimack
Evans Brook	Taylor River	
Groundwater Ponds No surface flow		
Dow Pond		Coastal
Three Corners Pond		Coastal
Young Ponds		Piscataqua
Rivers and Streams	Sub-Watershed	Watershed
Exeter River	Exeter-Squamscott River	Piscataqua
Great Brook	Exeter-Squamscott	Piscataqua
Mill Brook	Exeter-Squamscott River	Piscataqua
York Brook	Exeter- Squamscott River	Piscataqua
Hobbs Brook	Exeter-Squamscott River	Piscataqua
Hodges Brook	Great Brook to Exeter-Squamscott River	Piscataqua
Bodwell Brook	Great Brook to Exeter-Squamscott River	Piscataqua
Winkley Brook	Hampton Falls River to Hampton River to Hampton Harbor	Coastal
Lewis Brook	Winkley Brook to Hampton Falls River to Hampton River to Hampton Harbor	Coastal

Gavutis Brook	Winkley Brook to Hampton Falls River to Hampton River to Hampton Harbor	Coastal
Rice Brook	Taylor River to Hampton Falls River to Hampton River to Hampton Harbor	Coastal
Sawyer Brook	Winkley Brook to Hampton Falls River to Hampton River to Hampton Harbor	Coastal
Briggs Brook	Back River to Powwow River to Merrimack River	Merrimack
Rosencrantz Brook	Back River to Powwow River to Merrimack River	Merrimack
Hog Hill Brook	Powwow River to Merrimack River	Merrimack

Vernal Pools - Vernal pools are common in Kensington and all property should be assessed for the presence of vernal pools prior to and development or other land altering activity such as agricultural drainage and forestry. Although they may vary in size from a few square feet in area to several acres and may be located in a number of different sites – woods, floodplains or gravel pits—they do have certain features in common. Although they appear in the same place year after year, they are defined as temporary bodies of water because most dry up in hot weather or times of drought. All of them are contained bodies of water, many without any permanent outflow. Some vernal pools do have seasonal outflow and some have man-made ditches partially draining and lowering water levels to reduce flooding. These pools are prime candidates for wetland restoration.

Vernal pools do not support fish or predatory aquatic larvae such as dragonflies and aquatic beetles making them excellent breeding grounds for species whose eggs would provide an excellent food source were fish present. Some species are so dependent on vernal pools for their survival that their very presence is taken to establish that a particular basin of water is indeed a vernal pool. Not surprisingly, these are known as indicator species.

There are many dozens of vernal pools in Kensington, most with no discernable surface water inlet or outlet. There are also many small, man-made, dug and dammed ponds that cannot sustain fish populations that function as vernal pools. In addition, some seasonal brooks, spring holes, and ponds created by beaver dams function as vernal pools. The many hundreds of mature white pine, hemlock and red maple windthrows all over town with their huge, organic root mats uprooted in the air have created small and functional vernal pool type basins. Many are being used by egg laying amphibians.

An essential inhabitant of vernal pools is the fairy shrimp. These are tiny crustaceans that are found throughout the country. They are the earliest creatures to be seen in the spring, often appearing in March when their early mating leaves eggs on the floor of the pool. These are designed to survive drying out, intense heat and freezing, and will hatch the following spring when the pool is once again filled with water. Should there be a dry spell that prevents this from occurring, the eggs are prepared to wait out the weather.

Some amphibians are also indicator species of vernal pools. Indicator species in New Hampshire are the spotted salamander and the wood frog. Wood frogs are one of the earliest creatures to be seen in the spring, often appearing in March, when their early mating makes it possible for the eggs to develop before the pool dries up. The wood frog call sounds very much like the quacking of ducks and is an early sign of spring. This frog is brown with a black mask, and is often seen in the woods during the summer.

Spotted salamanders lay their eggs in vernal pools as well, and migrations of salamanders to breeding areas usually take place after the first heavy rain in early spring. Although both the spotted salamander and the wood frog may be found mating in more permanent waters, eggs laid in vernal pools have the best chance of surviving.

Many other species use vernal pools although they do not have the same dependency upon them. Among the amphibians, the species are four-toed salamander, Eastern newt, spring peeper, American toad, the gray tree frog, and the green frog. Among the invertebrates, there are clam shrimp, fingernail clams, and amphibious snails, caddis flies and other aquatic insects. Although no reptile is among the indicator species, the spotted turtle, the earliest turtle to appear in the spring, sometimes moving about in March, often uses such pools as a source of food and a place for courtship and mating. Blanding's turtles have been known to overwinter in vernal pools. Both of these species are endangered in New Hampshire and their appearance is of special interest to the Non-Game and Endangered Species Division of New Hampshire Fish & Game. Information on reporting reptiles and amphibians observed in the wild may be found at the following website:

http://www.wildlife.state.nh.us/Wildlife/Nongame/reptiles_amphibians.htm

Recommendations for Protecting Vernal Pools:

- Identify and map vernal pools on subdivision plans and site plans in order to provide an opportunity to mitigate the impacts to these sensitive areas.
- Keep log landings, roads and trails out of vernal pools and the area adjacent to them. Busy roads near a vernal pool can lead to massive annual mortality and local extinctions.
- Maintain shade around a vernal pool in order to keep it from drying up too quickly and to maintain water temperatures.
- Keep slash out of a vernal pool during forestry operations and during development.
- Maintain the upland (non-wetland) habitat where many vernal pool dependent species spend most of their life cycle

Wetlands - Wetlands, as defined by the Environmental Protection Agency, the NH Department of Environmental Services and the Kensington Zoning Ordinance are those areas that are inundated or saturated by surface or groundwaters at a frequency and duration sufficient to support and that under normal circumstances do support a prevalence of vegetation adapted for life in saturated soil conditions. Thus a wetland is defined by the presence of all three “H’s”: hydrophytes or wetland vegetation, hydrology and hydric soils.

Wetlands are an integral part of Kensington’s natural resources. They are important for removing excess nutrients and sediment from the water, slowing and storing floodwaters, promoting groundwater infiltration, and providing habitat for a variety of vegetation and animal life. In addition, wetlands provide recreational, educational and research opportunities. They add to the visual resources of the Town, especially in the fall when the red maples turn scarlet. Wetlands are most often found along streams and adjacent to ponds and lakes. They can be found in clustered complexes that are of great value. Vernal pools are a special type of wetland that dry out completely in the summer and have no fish population.

There is a diversity of wetland types in Kensington, including areas of shallow water with emergent vegetation such as cattails, forested wetlands, and scrub-shrub wetlands. The principal types of wetlands with standing water in the spring have been mapped from aerial photos by the National Wetlands Inventory (NWI) of the U.S. Fish and Wildlife Service. The NWI wetlands do not include all wetlands, particularly those that do not typically have standing water in the spring. Therefore, this is an underestimate of the amount of wetlands. The more significant, wetlands, however, are included in the NWI.

The NWI classification codes for Kensington describe the dominant vegetation type as well as the hydrology of each wetland. For the purposes of this map, these codes were categorized by the dominant vegetation type. Map 2 displays NWI data.

- **Emergent wetlands/marshes** are those wetlands with non-woody vegetation that grows above the land and/or water surface. Great Meadows is one example of emergent wetlands.
- **Forested – deciduous wetlands** are wetlands with deciduous trees as the dominant vegetation type. Red maple and swamp white oak swamps surrounding Great Brook are examples of forested – deciduous wetlands.
- **Forested – evergreen wetlands** are wetlands with evergreen trees as the dominant vegetation type. Hemlock and Atlantic white cedar are examples of evergreen trees that might be dominant in a forested – evergreen wetland. This type of wetland may be found in the Great Meadows drainage south of Kimball Road.

- **Forested – dead wetlands** are wetlands where a once forested wetland has been flooded (usually by a beaver impoundment) and the standing trees are dead. The Cove area in Kensington is an example of this wetland type. These wetland types often become nesting areas for great blue heron rookeries and for cavity nesting ducks and songbirds until the trees fall down.
- **Deciduous – shrub wetlands** are wetlands where the dominant form of vegetation is deciduous shrubs. Highbush blueberry, silky and red osier dogwood, sweet gale, spice bush, and winterberry are common deciduous shrubs in Kensington wetlands, found in both the Great Meadows and the Cove.
- **Evergreen – shrub wetlands** are relatively uncommon. These wetland types are dominated by shrubs that do not lose their leaves. Leatherleaf and labrador tea are broadleaf evergreen shrubs.
- **Unconsolidated bottom wetlands** are those wetlands with open water over much of the surface area of the wetland. Muddy Pond in Kensington is an example of this type of wetland. Only 4-6 acres of Muddy Pond are open water, but the floating bog acreage around the pond is nearly twice as much. Vegetation may grow in these wetlands below the surface of the water and/or may float on the water but is typically not visible early in the growing season when the aerial photography used to classify wetland types is taken.

The total area for NWI wetlands in Kensington is 2,215.7 acres or 28.9 % of the town's surface area. This acreage does not include seasonal wetlands and vernal pools. Some people would say that this high percentage of wetland makes Kensington rather unusual and fortunate because wetlands provide critical water supply storage and wildlife habitat.

Wetland Buffers - In addition to retaining the wetland itself, the undeveloped uplands surrounding the wetland are also essential for a healthy wetland. Maintaining a buffer of a naturally vegetated upland area adjacent to wetlands and surface waters is important to reduce the adverse effects of human activity on these water resources. Vegetation in buffers intercepts rainfall, slows meltwater and promotes infiltration. In addition, a vegetated buffer provides habitat for species dependant on the wetland system and travel corridors for larger mammals. A minimum upland buffer width around wetlands and other shorelines of 100 feet is recommended and 300 feet is desirable to maintain good habitat.

The first step to protecting wetlands and the functions they provide is protecting the land surrounding them. A look at current zoning regulations in Kensington shows a limited amount of protection to buffers compared to recommendations from "Buffers for Wetlands and Surface Waters", A Guidebook for New Hampshire Municipalities published in 1997 by the NH Department of Environmental Services. The guidebook states that "100 feet is recommended as a reasonable minimum buffer width under most circumstances." It explains that research has shown that 100 feet will generally provide a 60% or higher removal rate of pollutants. Because of the impacts to human health of tainted water supplies, buffers larger than 100 feet

may be prescribed around existing or potential water supplies. Buffers of 100 feet protect wildlife species that are aquatic or that stay very close to the wetland edge, but would provide little or no life support for others. Water quality in wetlands and surface waters is important for all wildlife, not just aquatic.

Table 4
Riparian Buffer Requirements
 as recommended by the Center for Watershed Protection, Elliott, MD
www.cwp.org

Function	Minimum Buffer Width
Bank stabilization	50 feet
Sediment control	150 feet
Flood control	200 feet
Wildlife habitat	300 feet

Current Kensington zoning regulations require a 100 foot buffer between septic systems and wetland soils. Buildings currently have a setback of 50 feet from wetlands or body of water. Septic systems, which generate excess nutrients and pathogens, are not at the minimum recommended setback and are potentially very detrimental to wetland systems. Septic systems have a finite useful life until replacement is needed; unfortunately replacement is seldom done until the system fails. Hydric B wetlands are usually a waterbody’s first defense against pollutants and need just as much buffer as Hydric A soils to provide an acceptable rate (60%) of pollutant removal. Buffering wetlands and surface waters should make up only one piece of a comprehensive natural resource protection plan. As this town faces more development pressures on natural resources, changes in zoning may need to be instituted, coupled with protection through acquisition or easements, to protect a broad spectrum of water resources.

Great Meadows Wetland Complex - The Great Meadows wetland complex encompasses 1,400 acres on Kensington’s northern border with Exeter and is a critical wetland abutting and feeding the Exeter River. Great Meadows has been identified in several plans as a high priority for resource protection. These plans include the 2006 Land Conservation Plan for New Hampshire’s Coastal Watersheds, The Society for the Protection of NH Forests’ study on southeastern New Hampshire, and the Conservation Plan for the Great Bay Region prepared by the Great Bay Resource Protection Partnership. Conservation of the several parcels of land in town, including the Kimball, Parker, Tuthill, and other properties is a critical step towards protection of this valuable natural resource.

C. Groundwater Resources

Kensington residents receive their drinking water entirely from groundwater sources. Aquifers are concentrations of groundwater, and those having medium to high potential to yield groundwater occur in the seacoast area as alluvial deposits of sand and gravel or in bedrock

fractures. The sand and gravel deposits are called “stratified drift aquifers” and typically yield more groundwater than bedrock fractures. The major source of recharge to these aquifers is through precipitation filtering directly down into the aquifer. Map 4 displays aquifers and groundwater in Kensington.

A 1992 study by the U.S. Geological Survey (USGS) identified one very large and two small stratified drift aquifers within Kensington. The largest aquifer lies beneath Route 150 from North Road to Old Amesbury Road. This aquifer is categorized by USGS as having a transmissivity of less than 1,000 square feet/day. Transmissivity is the ability of an aquifer to transmit water. Within this large aquifer there are two small areas, one near the intersection of Route 150 and Route 107 and the other on the Seabrook town line south of Route 107 with a higher producing capacity and transmissivity of greater than 2,000 square feet/day. Both of these aquifers lie beneath the Town’s commercial zone. Also south of Route 107 is an aquifer that lies beneath Kensington, Hampton Falls, Seabrook and Amesbury. The fourth aquifer in Kensington is a small aquifer with a transmissivity of less than 1,000 square feet/day, which lies beneath Osgood Road from Drinkwater Road to Hemlock Road.

Groundwater quality can be impaired by a variety of materials. Sources of groundwater contamination include gravel pit excavations, landfills, commercial and industrial wastes, agricultural fertilizer, failing septic systems, and road salt. Former gravel pit exposures have been a major negative factor on these aquifers in the past. Groundwater quantity can be reduced by contamination of groundwater supplies, over-pumping in the aquifer zone, and increasing impervious surfaces such as roof tops, roads, and parking lots. These surfaces prevent the infiltration of precipitation into the ground.

Impervious Surfaces - When a watershed is increasingly covered with pavement, buildings, and other compacted surfaces that are impervious to water, significant changes in water quality and quantity result. When rain falls on impervious surfaces, it runs off faster into surface waters, carrying with it sediment and pollutants from road surfaces, lawns, construction sites, and parking lots. Flooding, warming water temperatures, and channelization of streams are the result. Infiltration of rainfall into the ground to replenish groundwater is reduced, reducing the quantity of groundwater available for withdrawals for drinking water.

This type of run-off, called “non-point source pollution”, is now the most serious threat to water quality for New Hampshire and for Kensington. Low impact construction and site designs that promote retention and infiltration of rainwater and runoff, narrower streets and driveways when possible, shrub and tree buffers to waterways, and more compact development patterns can protect Kensington’s water quality and quantity as the town grows.

Studies conducted in the northeast have documented that by converting as little as 10% of a watershed to impervious surfaces, stream water quality and organisms begin to deteriorate. Above 25% impervious surface, water quality is seriously degraded.

Numerous agencies are currently studying groundwater resources in Southeastern New Hampshire. The New Hampshire Coastal Program, New Hampshire Department of Environmental Services, New Hampshire Geological Survey and the U.S. Geological Survey have researched the availability of groundwater resources in Kensington and surrounding communities. Population increase and associated development have resulted in an estimated 50% increase in the use of groundwater and surface water resources for drinking water as well as industrial and other uses. To gain a better understanding of how much groundwater is available in the region, researchers quantified water storage and water movement in groundwater and surface water systems. The final report, "Assessment of Ground-Water Resources in the Seacoast Region of New Hampshire", states:

Climate change in New England is forecast to include more frequent and intense precipitation events, with a slight decrease to little change in total precipitation, and increasing temperatures. The effects of this potential future climate change on the Seacoast hydrologic system would likely include reduced base flows and fresh ground-water discharges to tidal areas and lowered ground-water levels. The effects of these climate changes by 2025 were estimated to be greater than the potential effects of increased water demands. The analyses indicated that there are potential issues of concern for future use of water resources in the Seacoast region. The models developed and demonstrated in this investigation can provide water-resource managers and planners tools with which to assess future water resources in this region. The findings regarding the effects of increasing water demand and potential climate change on ground-water availability may be transferrable to other regions of the Nation with similar hydrogeologic and climatic characteristics.

The full report is available from the following website:

<http://pubs.usgs.gov/sir/2008/5222/>

Stormwater - Stormwater is a term used to describe water that originates during [precipitation](#) events. It may also be used to apply to water that originates with snowmelt or rain. Stormwater that does not soak into the ground becomes [surface runoff](#), which either flows into surface waterways or is channeled into [storm sewers](#). The US EPA established the National Pollutant Discharge Elimination System (NPDES) to identify sources of stormwater pollution and other contaminating discharges.

Stormwater is of concern for two reasons, flooding and pollution. The volume and timing of runoff can impact flood storage and control, and stormwater runoff can also flush potential contaminants from roads and parking lots into surface waters.

The treatment and management of stormwater becomes increasingly important with the increasing amounts of impervious surface cover in Kensington and surrounding communities. Two important resources exist for aiding in stormwater management: the US EPA, and the

University of New Hampshire Stormwater Center, which serves as a local resource to communities on stormwater management. The UNH Stormwater Center's website has many resources for Planning Boards, Conservation Commissions, developers and landowners: <http://www.unh.edu/unhsc/>

D. Potential Threats to Water Resources - There are two general types of pollution threats to surface and groundwater resources: nonpoint and point. Nonpoint pollution sources are diffuse and may discharge pollutants over a broad area. Examples include stormwater runoff from parking lots and roads, erosion and sediment from land development, and leachate from failed septic systems. Point sources of pollution are discernible as the sources can be identified, typically pipes, ditches, and channels.

Potential threats to water resources in Kensington include:

- Salt Piles – Town owned salt pile is enclosed and located on Route 107.
- Salted Road – All the paved roads in Kensington receive some degree of salting during the winter months.
- Underground Fuel Storage Tanks – Underground Storage Tanks (UST) are a potential threat to water resources in that releases can occur due to spills, defects in tank construction, improper installation, and corrosion of older tanks. New Hampshire requires all tanks with a capacity of 1,100 gallons or more to be registered and the use reported to the NH DES Waste Management Division. UST's are located at the gas station on Amesbury Road. There are smaller fuel tanks in town, especially around older homes.
- Pesticide Application Sites, Farms, and Agricultural Uses – There are several active farms in Kensington which may use fertilizers and pesticides as a part of normal agricultural practice. The New Hampshire Department of Agriculture, Markets, and Food promotes the use of Best Management Practices to reduce the threat of pollution from agricultural operations. There are also lawns surrounding homes where pesticides and artificial fertilizers are applied regularly.
- Industrial and Commercial Activity – There are a few industrial and manufacturing businesses in Kensington located along the Route 150 Commercial Zone, one utility company along Drinkwater Road, a large tractor sales store on Route 107, and a gasoline station, store, and restaurant on Route 150. It is important to note that the highest producing groundwater aquifer lies underneath the Route 150 Commercial Zone.
- Septic Systems and Leaching Fields – Generally speaking, septic systems are considered nonpoint source pollution because of their discharge of effluent into the ground. The threat presented by such systems increases when a system fails and the wastewater is

not treated sufficiently. All wastewater produced in Kensington is treated by septic systems.

- Waste from livestock and household pets are also a threat to surface water and groundwater quality.

Recommendations for Protecting Freshwater Resources:

- Consider requiring a 100 foot vegetative buffer from wetlands to maintain water quality and wildlife habitat.
- Increase Code Enforcement of existing wetland regulations.
- Encourage use of pervious surfaces in development and renovation with the goal of decreasing the amount of impervious surfaces such as reducing road width requirements for subdivisions.
- Promote the creation of Rain Gardens.
- Prevent the spread of invasive exotic aquatic plants such as phragmites and purple loosestrife to ponds and wetlands through education, monitoring, and removal.
- Educate the public on the importance of protecting wetlands and their vegetative buffers and reducing non-point source pollution from sedimentation, fertilizers, pesticides, and hazardous wastes.
- Monitor groundwater resources in Kensington.
- Decrease the allowable coverage area for development in the Commercial District which overlies an aquifer.

IV. Agricultural and Farmland Resources

Agricultural land is valued in Kensington for the food that its farmers produce, some of which is locally available. It is also valued for its scenic beauty and diverse habitat. Kensington's farmers and farm families help other residents connect with the town's rural heritage and promote better land management. In addition, Kensington's farmers are stewards of significant natural resources in the community. Table 6 describes some active farms in Kensington.

Aside from its obvious importance for growing food, agricultural land has value as a scenic resource, as wildlife habitat, and as a groundwater recharge area. Farming also provides economic benefits, especially to the local and regional economy. The loss of farmland has a

direct impact on the landscape as well as an indirect impact on the local tax rate. The indirect economic benefit of farming relates to the real estate value of the farmland itself compared to the cost of providing public services to residents once the land is converted to residences. As demonstrated in the Cost of Community Services study conducted by the UNH Cooperative Extension Service in 1995, residential subdivisions cost the town more in terms of providing municipal services than is received in increased property tax revenue, whereas farmland and other open land produce more in revenues than they consume in services, even when enrolled in the Current Use program.

Although most of the farms are smaller in size than in the past, these remaining farms have a very significant impact on the scenic and rural qualities of the community. Farming in Kensington is defined as any agricultural activity in which land is used for the purpose of producing any cultivated commodity, including, tree farms, orchards, maple sugarbushes, livestock, and poultry.

Table 5
Agricultural Resources in Kensington
Including farms, active forestland, equestrian facilities

Name	Location	Products
Bodwell Farm	Stumpfield Road	Milk, cattle, hay
Sargent Farm	Route 84	Hay, cattle
Flying Colour Farm	Route 84	Horse boarding, training
Kensington Equestrian Center	Amesbury Road	Horse boarding, training
Yorkfield Farm	Drinkwater Road	Horse boarding, training
Kenridge Farm	North Haverhill Road	Horse boarding, training
Drumlin Farm	Amesbury Road	Vegetables
Shaw's Hill Farm	Shaws Hill Road	Fruit and vegetables
1739 Kimball Farm	Kimball Road	Hay
Wild Pasture Farm	Wild Pasture Road	Hay, maple syrup
Red Oak Farm/Dingman	South Road	Hay
Trundle Bed Farm	Cottage Road	Horse boarding
Sweet Baby Vineyards	South Road	Vineyard, wine
Cole Farm	Stumpfield Road	Maple syrup
Rozencrantz	South Road	Beef cattle, hay
Sullivan	Moulton Ridge Road	Hay, livestock
Heron Pond Farmstand	South Road	Opening May 2013
Hemlock Hollow Farm	South Road	Maple syrup, berries, Christmas trees
Phillips Exeter Academy (former Colby and Benedetto farms)	Drinkwater Road	Hay, trees

Agricultural Soils - New Hampshire is losing its most productive farmland. Between 1982 and 2000, nearly 18,000 acres of prime farmland became unavailable for production of crops, feed, forage or fiber. Most was lost to urban and rural development. Only 2% of New Hampshire soils classify as prime farmland. Prime Farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops and is also available for these uses. Cropland, usually the most productive agricultural land, has declined 30% statewide from 1974 to 2000.

An analysis of 2010 landcover data shows that 1,483.7 acres of land in Kensington are classified as Prime Farmland, 1,185.3 acres are classified as farmland of local importance, and 1,804.9 acres are classified as farmland of statewide importance. The last two categories are defined as soils that may economically produce high yields of crops when treated and managed according to acceptable farming methods. Map 5 identifies farmland soils.

Hay is grown on a commercial basis by several farms, and some of these farms are listed in Table 6. There are many other Kensington residents who hay or have their fields hayed but are not commercial operations. There are numerous other residents unknown to us who have horses, sheep, chickens and other livestock. In addition, many people raise vegetables, fruit and herbs and make maple syrup for their own consumption and to share with their family neighbors.

In order to get a more accurate understanding of the value of agriculture to Kensington, the Town could complete an Agricultural Profile. A copy of the fact sheet *Developing an Agricultural Profile for Your Town* is available from the UNH Cooperative Extension: http://extension.unh.edu/resources/representation/Resource000023_Rep23.pdf

Recommendations for Protecting Agricultural Resources:

Agriculture is important to Kensington in many ways. The commercial farms contribute to the town economically and the Town's residents are fortunate to enjoy locally grown produce. The open fields and farm structures comprise much of the rural and scenic character of town.

Recommendations to help sustain economically viable agriculture in Kensington are:

- Continue to educate farmland owners about the benefits of conservation easements on their property.
- Encourage farmers to follow "Best Management Practices" to protect water quality.
- Research and implement mechanisms for greater protection of prime agricultural soils

V. Forest Resources

Forests provide Kensington with a diverse range of benefits. Kensington's forests provide valuable habitat for plant and animal populations. The forests absorb rainwater, increase groundwater infiltration, and buffer surface waters from sedimentation and contamination. Near roads and homes, trees cool summer temperatures by 10 degrees or more, break winter winds, and filter dust and pollutants from the air. Forests host recreational trails and hunting grounds. Forests also produce great quantities of oxygen and consume large quantities of carbon dioxide. Our tourist industry and seasonal residents are attracted by healthy forests. In addition, well-managed forests provide a sustainable supply of maple syrup, home firewood and commercial wood products and jobs needed by New Hampshire residents.

A forest is comprised of several forest types. Forest types are distinctive associations or communities of trees, shrubs, and herbaceous plants. They are named for the predominant tree species occurring in the type. Common forest types in Kensington include White Pine; Northern Hardwood (sugar maple, beech, black and yellow birch, red maple, white ash and smaller amounts of other species); Red Oak, White Oak, Swamp White Oak, Black Oak, Hemlock, and Aspen-Birch. A forest type may be dominated by a single tree species or it may be dominated by several species growing together. Some of the rarer occurring native tree species include red spruce, adjacent to the Horse Hill seepage swamp; striped (moose) maple on Moulton Ridge; and, a scattering of still surviving American chestnut saplings, as well as red pine, pitch pine, and black gum.

Kensington's forests provide us with wood and food products, wildlife, scenic beauty, a modified microclimate, stabilization of steep slopes and snowpacks, the control of water flows, the creation and maintenance of stream habitat for aquatic animals, and recreation. In addition, forests constitute a major storage of carbon not only in the trees themselves, but in the forest soils as well. Map 7 highlights unfragmented blocks of land, including forest, in town.

New Hampshire is the second most forested state in the US trailing Maine. Kensington is approximately 51% forested; the state average is approximately 85%. Many of Kensington's forests have grown from abandoned agricultural land and are now mature.

Recommendations for Protecting Forest Resources:

- Identify forestland abutting brooks, streams and ponds for conservation as these forests play an important role in protecting water quality and quantity, and wildlife habitat.
- Encourage forest activities to follow best forest management practices supporting natural diversity and economic benefits.

- Partner with land conservation organizations and surrounding municipalities in the region to protect critical areas identified in the Land Conservation Plan for New Hampshire’s Coastal Watersheds.
- Strengthen enforcement of land use regulations by code enforcement.

VI. Natural Communities and Habitat

The July 2010 report from the NH Natural Heritage Bureau entitled, *Rare Plants, Rare Animals, and Exemplary Natural Communities in New Hampshire Towns*, describes natural communities as different types of forests, wetlands, and grasslands. Most of New Hampshire is covered by relatively common natural community types. Scattered throughout the state, however, and usually in predictable areas, are distinctive communities found in few other places. The Natural Heritage Bureau tracks exemplary natural communities. To qualify as exemplary, a natural community must be of a rare type or must be a very old occurrence of common community in good condition.

Kensington's natural communities serve not only the practical and essential role of keeping our soil, water and air healthy, a concept known as ecological services, but they also provide us with diverse physical landscapes and scenic beauty.

Natural communities are defined by three characteristics:

- The plant species present;
- The physical structure of the vegetation (short grasses vs. tall trees);
- The physical environment, which consists of the physical setting (pond shore or hillside), the water and nutrients present and the climate.

Natural communities are made up of living components that are closely interrelated and interact with one another and the environment. Humans are also a part of the living landscape and have a tremendous influence. Human disturbance of the natural environment is occurring at a faster pace than the natural communities can adapt to. It is vital that we become aware of the natural communities we have in Kensington in order to protect them.

The NH Natural Heritage Bureau has identified the following Exemplary Natural Communities in Kensington:

- Semi-rich Oak-sugar maple forest**
- Red maple-black ash swamp**
- Swamp white oak floodplain forest***
- Tall graminoid meadow marsh**

** = community flagged by NH Natural Heritage Bureau as “very high importance”

*** = community flagged by NH Natural Heritage Bureau as “extremely high importance”

These flags are based on a combination of how rare the species or community is and how large or healthy its examples are in a town.

Table 6
Rare Plant Species and Rare Animal Species in Kensington
Source: NH Natural Heritage Bureau, January 2012

Latin Plant Name	Common Plant Name	# Observed Last 20 Years in Town	# Observed Last 20 Years in State	State Status
<i>Cardamine bulbosa</i>	Bulbous Bitter Cress	Historical	5	Endangered
<i>Mikania Scandens</i> **	Climbing Hempweed	1	10	Endangered
<i>Isoetes engelmannii</i>	Englemann's Quillwort	Historical	15	Endangered
<i>Carex festucacea</i>	Fescue Sedge	Historical	1	Endangered
<i>Spargenium eurycarpum</i> **	Large Bur-reed	1	20	Threatened
<i>Liparis loeselii</i>	Loesel's Twayblade	Historical	24	Threatened
<i>Sphagnum contortum</i> **	Peat Moss	1	10	Endangered
<i>Sanicula canadensis</i>	Short-styled Sanicle	Historical	2	Endangered
<i>Carex cristatella</i> **	Small-crested Sedge	1	12	Endangered
Latin Bird Name	Common Bird Name	# Observed Last 20 Years in Town	# Observed Last 20 Years in State	State Status
<i>Vermivora chrysoptera</i>	Golden-winged Warbler	Historical	4	Special Concern
<i>Ardea herodias</i>	Great Blue Heron (rookery)	Historical	39	None
<i>Pooecetes gramineus</i>	Vester Sparrow	Historical	12	Special Concern
Latin Fish Name	Common Fish Name	# Observed Last 20 Years in Town	# Observed Last 20 Years in State	State Status
<i>Esox americanus americanus</i> **	Redfin Pickerel**	1	32	Special Concern
Latin Reptile Name	Common Reptile Name	# Observed Last 20 Years in Town	# Observed Last 20 Years in State	State Status
<i>Clemmys guttata</i> **	Spotted Turtle	2	99	Threatened
Latin Amphibian Name	Common Amphibian Name	# Observed Last 20 Years in Town	# Observed Last 20 Years in State	State Status
<i>Ambystoma hybrid</i> **	Jefferson/Blue-spotted Salamander	1	4	None

*** = community flagged by NH Natural Heritage Bureau as "extremely high importance"

** = community flagged by NH Natural Heritage Bureau as "very high importance"

* = community flagged by NH Natural Heritage Bureau as "high importance"

These flags are based on a combination of how rare the species or community is and how large or healthy its examples are in a town.

Protecting our natural communities is necessary to preserve the biological diversity of our community and of New Hampshire. Biological Diversity, or biodiversity, is the variety and variability of all living organisms. This variety includes the diversity of plants, animals, fungi, algae, bacteria, and other microorganisms, their genetic variability, the natural communities in which they live, and the processes and interactions that weave the biological and physical elements of the planet into a complex web.

A. Plant Communities - In 1987, the New Hampshire state legislature passed the Native Plant Protection Act (NH RSA 217-A) and formally recognized that "for human needs and enjoyment, the interests of science, and the economy of the state, native plants throughout this state should be protected and conserved; and their numbers should be maintained and enhanced to insure their perpetuation as viable components of their ecosystems for the benefit of the people of New Hampshire." Currently, there are 288 species listed as endangered or threatened under the Native Plant Protection Act and that are tracked by the NH Natural Heritage Bureau.

The Kensington Conservation Commission encourages input from residents should they find an unusual plant species or a unique natural community. The Commission may be reached by calling the Town Office at 603-772-5423.

Endangered and threatened are defined under the NH Native Plant Protection Act as: Endangered species are those ceasing to exist locally or in the state; Threatened species face the possibility of becoming "endangered".

Plants Listed as Special Concern - In addition to recognizing Endangered and Threatened plant species, the NH Native Plant Protection Act identifies 11 plants as Special Concern. These species are somewhat uncommon in New Hampshire, and are at risk of decline due to over-collection.

The NH Natural Heritage Bureau does not track these species, which are species of special concern:

- Narrow-leaf wild leek *Allium tricoccum* var. *burdickii*
- Wild leek *Allium tricoccum* var. *tricoccum*
- Wild ginger *Asarum canadense*
- Giant blue cohosh *Caulophyllum giganteum*
- Blue cohosh *Caulophyllum thalictroides*
- Sea lavender *Limonium carolinianum*
- Ostrich fern *Matteuccia struthiopteris* var. *pennsylvanica*
- Canadian burnet *Sanguisorba Canadensis*
- Slippery elm *Ulmus rubra*

These species are not rare in New Hampshire, but their showy nature makes them vulnerable to over-collection. Although the listing does not give the plants any legal protection, it does give the landowner recourse if someone digs it up without the landowner's permission.

B. Beneficial Insects - Beneficial insects are a natural way to fight insect pests and protect our environment. When we encourage beneficial insects we are increasing Kensington's biodiversity and decreasing our dependency on poisonous chemical controls. Not only are we creating a more beautiful environment, but a safer one as well.

There are two categories of insects considered beneficials, predators and parasites. Predators are organisms that kill and feed on their prey outright. They are generally larger than their prey and must eat lots of prey to complete their development. Parasites are usually smaller and often weaker than their prey. They lay eggs on or within a host insect. The immature larvae use the host for food over time. A parasite will use only one or a few insects for food.

You can entice beneficial insects to your yard and garden by providing them with the three basic necessities: water, food and shelter. In addition, you should avoid using and/or spraying broad-spectrum insecticides. The broad-spectrum insecticides are not selective in that they will kill not only the pest but the beneficial as well. Even the organic pesticides will kill the beneficial insects.

**Table 7
Beneficial Insects**

Beneficial Insects	Pests They Prey On
Aphid Midge	60 species of aphids (on vegetables, flowers, fruit and shade trees)
Assasin Bug	Many insects including, aphids, Japanese beetles, leaf hoppers, fly larvae, tomato hornworms
Big-eyed Bug	Eggs and small larvae of armyworms, hornworms, loopers, corn earworms, spider mites, aphids, leafhoppers, flea beetles, mealybugs and thrips. One big-eyed bug can eat 12 small caterpillars or leafhoppers per day.
Braconid Wasp	Tomato hornworm, armyworm, cabbageworm, gypsy moth, other caterpillars, beetle larvae, flies, aphids and other insects
Bumblebees, including the Orchard Mason Bee	Extremely important wild pollinators for a variety of fruit and seed crops.
Centipedes	Predators of soil-dwelling pests and insects including slugs, worms and fly pupae. They may also feed on earthworms, but are considered beneficials.
Damsel bugs	Aphids, thrips, leafhoppers, caterpillars, plant bugs and tree hoppers
Damselflies, Darners & Dragonflies	Mosquitoes and small flying insects
Firefly	Many species of pest insects

Ground Beetle	Most species prey on slugs, snails, cutworms and cabbage-root maggots in soil; some pursue prey on plants or trees, such as Colorado potato beetle larvae, gypsy moth and tent caterpillars.
Hoverflies (Flower flies)	Many species of aphids
Honeybee	Extremely important pollinators of fruit, vegetables and agricultural crops. It is estimated that over 80 percent of pollination is done by domestic honeybees. ¹
Ichneumon Wasp	They lay their eggs inside other host insects such as caterpillars, sawfly, beetle larvae and other pests then parasitizes and kills the host.
Lacewing	Soft-bodied insects including aphids, thrips, mealybugs, some scales, moth eggs, small caterpillars and mites.
Lady Beetle (Ladybugs)	Aphids, thrips, mealybugs, mites or soft scales.
Mealybug Destroyer	Mealybugs, scale insects, aphids.
Millipedes	Feed on decaying plant material and are beneficial in breaking down organic matter. May occasionally feed on plant material laying on ground, like strawberries and tomatoes. Also predator of slugs and fly pupae.
Minute Pirate Bug	Will eat anything, but prefer thrips, spider mites, eggs of many insects, small caterpillars, leafhopper nymphs, corn earworms.
Praying Mantis	Almost anything, including other beneficial insects.
Predatory Mite	Spider mites
Predatory Thrip	Eggs and larvae of spider mites, aphids, other thrips, codling moth, Oriental fruit moth, bud moth, peach twig borer, alfalfa weevil, whitefly, leafminer flies and scales.
Rove Beetle	Many are predators of aphids, springtails, nematodes, fly eggs and maggots in the soil; some are parasitic on cabbage-root maggots and larvae of other flies. Many species are scavengers on decaying material.
Spiders	All spiders are predators. Wolf spiders are particularly beneficial to farmers and gardeners because they attack many common garden pests.
Spider Mite Destroyer	Many species of spider mites, especially in unsprayed raspberry patches.
Spined Soldier Bug	Many species of hairless caterpillars and beetle larvae including fall armyworm, sawfly larvae, Colorado potato beetle and Mexican bean beetle larvae.
Tachinid flies	Many species of caterpillars, including cutworms, armyworms, tent caterpillars, cabbage looper, gypsy moth; some attack sawflies, Japanese beetle, May beetle, squash bugs, green stink bugs and sowbugs.
Tiger beetles	Both adults and larvae prey on a wide variety of insects, but are considered mostly beneficial.
Trichogramma Wasps	Eggs of over 200 species of moths, including spruce budworm, tomato hornworm, corn earworm, corn borers and codling moth.
Water Boatmen	Mosquito larvae underwater
Water Strider	Mosquitoes at water's surface
Yellow Jackets	Adults seize large numbers of caterpillars, flies, beetle grubs and other insects to feed their young.

C. Wildlife Habitat - Kensington's forests, grasslands, farmland, wetlands, and rivers provide rich and diverse habitat for numerous animal species. A formal, on the ground inventory of animals for Kensington has never been conducted, so the correct extent of special habitats, rare species and common species is unknown. Birds have been well surveyed, especially during the 1980's by NH Audubon. The 2006 New Hampshire Fish and Game Wildlife Action Plan provides insight to some of Kensington's wildlife habitats. These special habitats and unfragmented natural lands need to be conserved in order to prevent common species from becoming rare and rare species from being extirpated from New Hampshire.

The New Hampshire Fish and Game Wildlife Action Plan may be found at the following website: http://www.wildlife.state.nh.us/Wildlife/wildlife_plan.htm

Unfragmented Open Space - Large blocks of forest, wetlands and farmland that are unfragmented by development or public roads are valuable for wildlife habitat, because they:

- provide essential forest interior habitat for species such as some songbirds that need to be distanced from human activity, pets, and the forest edge in order to survive.
- provide habitat for mammals that have large home ranges and prefer to avoid human contact, such as bobcat, bear, coyotes, deer, otter, and moose.
- enable owners of large parcels of forestland to conduct timber harvests that are economically viable.
- minimize conflicts that can arise when managed forests and farms are surrounded and interspersed with development.
- offer opportunities for remote recreation, including hunting, hiking, birdwatching, horseback riding, cross country skiing, snowshoeing, fishing, and snowmobiling, where landowners allow.

Larger fragments are more likely to support viable populations of species and therefore act as a source of individuals that can then move to another fragment. Small fragments may be unable to support breeding populations of some species. Persistent habitat fragmentation by roads and housing may also lead to genetic changes and a loss of genetic diversity as populations of less mobile species such as salamanders, snakes and turtles, are subdivided into small locally breeding populations.

Table 8 lists the types of habitat found in Kensington as determined by the NH Fish and Game as part of the 2006 Wildlife Action Plan, updated in March 2010. Information from the Plan is highlighted on Map 6.

Table 8
Wildlife Habitat Acres in Kensington
Source: NH Fish and Game Wildlife Action Plan, 2006, updated 2010

Habitat Type	Acres
Appalachian Oak-Pine	5343.0
Hemlock-Hardwood Pine	859.9
Grasslands over 25 acres	2212.4
Floodplain Forest	281.0
Marsh/Shrub Wetland	488.7
Peatland	109.9

Conserving these large blocks and connections between other significant habitat areas is important if residents want to retain the species that need larger and diverse home ranges and territories. Some areas should be studied further because the extent of unfragmented lands extends significantly into adjacent towns making that block more important. Habitat block size requirements for various animals are currently a subject of much study.

The 2006 NH Fish and Game Wildlife Action Plan describes the following types of habitats found in Kensington:

Appalachian Oak-Pine Forests - Appalachian oak-pine forests are found mostly below 900 feet elevation in southern New Hampshire and along the Connecticut River in western New Hampshire. The nutrient-poor, dry, sandy soils and warm, dry, climate influences the typical vegetation including oak, hickory, mountain laurel, and sugar maple. Many wildlife species use these forests for part or all of their life cycle including whip-poor-wills, black bears, northern myotis, and state endangered eastern hognose snakes. Traditionally, Appalachian oak-pine forests are influenced by frequent fires, which change the age structure of the forest. The diverse age and structure of the forest help to promote wildlife diversity. Intense development pressure particularly in the southeast corner of New Hampshire has dramatically reduced naturally occurring fires and increased fragmentation of this forest type. Incorporating habitat conservation into local land use planning, protecting unfragmented blocks, and adopting sustainable forestry are a few examples of conservation strategies for Appalachian oak-pine forests. [Click here to read the Appalachian oak-pine Habitat Profile in NH's Wildlife Action Plan \(PDF, 134 KB\).](#)

http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/WAP_habitats_PDFs/AppalachianOakP.pdf

Hemlock-Hardwood-Pine Forests - Hemlock-hardwood-pine forests are comprised of mostly hemlock, white pine, beech, and oak trees. Since this is a transitional forest, it can occur at different elevations and over different types of soil and topography, so the composition of vegetation can be variable. This forest type is the most common in New Hampshire and covers

nearly 50% of the state and provides habitat for numerous wildlife species such as the winter wren, northern and Louisiana water thrush, hermit thrush and other ground nesting birds, eastern pipistrelle bat, and bobcat. Many of the species that use this habitat type require large blocks of unfragmented forest such as the northern goshawk and black bear. Since this forest type is so common, it is sometimes overlooked in conservation efforts. Development and fragmentation is a huge threat to the continued existence of hemlock-hardwood-pine forest. Some conservation strategies for hemlock-hardwood-pine forests are incorporating habitat conservation into local land use planning, protecting unfragmented blocks of land, and educating landowners. [Click here to read the Hemlock-Hardwood-Pine Forest Habitat Profile in NH's Wildlife Action Plan \(PDF, 133 KB\).](#)

http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/WAP_habitats_PDFs/HemlockHardwood.pdf

Grassland - Grasslands are comprised of grasses, sedges, and wildflowers with little to no shrubs and trees. The most common grassland habitats are airports, capped landfills, wet meadows, and agricultural fields such as hayfields, pastures and fallow fields. Pre-colonial grasslands in New Hampshire were probably only maintained by beaver and fires started by lightning and Native Americans. The numerous agricultural lands maintained by early European settlers provided ideal habitat for some wildlife species that need grassland habitat. As these agricultural lands were abandoned, these populations began to decline and are now on the state endangered list such as the eastern hognose snake, northern harrier, upland sandpiper and on the state threatened list such as the grasshopper sparrow. Other species also benefit from these open grass fields such as wood turtles and numerous species of butterflies. Development and natural forest succession have reduced grassland habitat in the state. Grasslands require maintenance and must be mowed to prevent them from becoming shrublands or forests. Only 8% of NH grasslands are currently under conservation easements. Reclaiming and maintaining grasslands are two important conservation strategies for grassland habitats. Many grassland and potential grassland habitat are on private land and landowners can help restore and conserve them. [Click here to read the Grassland Habitat Profile in NH's Wildlife Action Plan \(PDF, 148 KB\).](#)

http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/WAP_habitats_PDFs/Grasslands.pdf

Floodplain Forest - Floodplain forests occur in valleys adjacent to river channels and are prone to periodic flooding. Also referred to as riparian forests, they support diverse natural communities, protect and enhance water quality by filtering and sequestering pollution, and control erosion and sediment. Many wildlife species use these forests at some point in their life cycle. It would not be uncommon to find red-shouldered hawks, barred owls, veery, or chestnut-sided warblers breeding in floodplain forests. Evidence of beaver, mink, or otter can usually be found along the water's edge. Other wetlands, like swamps and vernal pools, can be found in floodplain forests and these areas are particularly important for Jefferson salamanders, northern leopard frog, wood turtles, and state endangered Blanding's turtles. Since these species, like most wildlife species, use a variety of habitats, not only is a floodplain

forest important but the adjacent upland is also crucial for these species. Floodplain forests with their rich soils have been converted to open farmland, hay land and grazing land for centuries, so many floodplains are no longer forested wildlife habitat. Other human activities have threatened these habitats including residential and commercial development along rivers and the installation of dams which have altered the natural flooding regime. Floodplain habitats are particularly vulnerable to invasive plants because the frequent disturbances from flooding give aliens opportunities to establish, and because these species tend to thrive in the nutrient rich soils characteristic of floodplains. Annual flooding can help control some of these invasives, if the natural flood regime is not altered. Deep flooding by beaver dams can be effective in temporarily eliminating them and stopping their spread. Some conservation strategies for maintaining this unique habitat type in the state are managing river impoundments to simulate natural water flows, removing dams where possible, and protecting the highest quality sites. Many floodplain forests are on private land and landowners can help restore and conserve them. [Click here to read the Floodplain Forest Habitat Profile in NH's Wildlife Action Plan \(PDF, 159 KB\).](#)

http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/WAP_habitats_PDFs/FloodplainFores.pdf

Marsh and Shrub Wetlands - Emergent marsh and shrub swamp systems have a broad range of flood regimes, sometimes controlled by the presence or departure of beavers, but mostly controlled by groundwater. This system, which is an important food source for many species, is often grouped into three broad habitat categories: wet meadows, emergent marshes, and scrub-shrub wetlands. Marsh and shrub wetlands filter pollutants, preventing them from getting into local streams, and help hold water to reduce flooding. Many wildlife species use marsh and shrub wetlands including common species like red-winged blackbirds, beavers, and painted turtles. Marsh and shrub wetlands are also critically important for state endangered Blanding's turtles, New England cottontails, northern harriers, ringed boghaunters, and sedge wrens plus state threatened spotted turtles and pied billed grebes. Development is a threat to these habitats mostly from driveways and roads that fragment wetlands or change the flow of water. The loss of an upland habitat around a marsh or shrub wetland also increases the amount of pollution and sedimentation threatening the habitat. Another constant threat to marsh and shrub wetlands is invasive plants such as purple loosestrife and Japanese knotweed that compete with native vegetation. Some conservation strategies for marsh and shrub wetlands are restoration and protection of these important habitats. Many marsh and shrub wetlands are on private land and landowners can help restore and conserve them. Click here to download the Marsh and Shrub Wetlands Habitat Stewardship Series. [Click here to read the Marsh and Shrub Wetland Habitat Profile in NH's Wildlife Action Plan \(PDF, 187 KB\).](#)

http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/WAP_habitats_PDFs/MarshShrubWetla.pdf

Peatlands - Peatland habitats are extremely important for carbon sequestration on a local and global scale. The water in peatlands has low nutrient content and typically high acidity caused by limited groundwater input and surface runoff. These environmental conditions are such that plant and animal material take a very long time to decompose. This organic material contains

carbon and other nutrients, storing it away and slowly releasing it into the atmosphere. Drainage and destruction of peatlands releases this carbon into the atmosphere quicker, increasing greenhouse gases today. Conservation of the 11 different natural communities that comprise peatlands is also vital to the continued existence of many rare plant and wildlife species in New Hampshire. The state endangered ringed bog haunter uses peatlands and the surrounding uplands in the southern part of the state and may be found at Muddy Pond, but the “quaking bog” that surrounds the pond makes access difficult. Typical vegetation in a peatland such as Muddy Pond includes sphagnum moss, leather leaf, Atlantic white cedar, and American larch. Threats to peatland habitats are development, altered hydrology (amount and flow of water), and unsustainable forest harvesting. Non-point source pollutants, such as road salt, lawn fertilizers, and pesticides, also threaten this habitat by altering the acidity and nutrients. Establishing buffers around this habitat is one conservation strategy that will help minimize the threats to peatland habitats. [Click here to read the Peatland Habitat Profile in NH's Wildlife Action Plan \(PDF, 168 KB\).](http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/WAP_habitats_PDFs/Peatlands.pdf)

http://www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/WAP_habitats_PDFs/Peatlands.pdf

All wildlife needs food, shelter, water and space to survive. These life requirements are defined as an animal’s habitat. Animals use a variety of strategies to find food, water and shelter in the environment and it is these strategies that determine the habitat needs for each species. Habitat is everywhere, yet some habitat is more important to wildlife than others. Habitat is more significant when it supports a rare species, represents a smaller percentage of the landscape, provides an abundance of food or other resources provides a buffer for wildlife against the effects of development, and is associated with several other types of habitat.

Other Unique or Critical Habitats - This habitat type is divided into the following groups:

- Habitat that is rare statewide, for example the stands of swamp white oak in Kensington’s Great Brook drainage and the Great Meadows;
- Habitat that is rare in a particular geographic area, for example the bog-like Muddy Pond and the extensive grassy marshes in Great Meadows;
- Uncommon land features which provide unique conditions for certain species, for example denning sites in rock piles;
- Habitat critical to certain species during a particular phase of their life cycle or a particular time of the year. Examples include cold water brooks for native brook trout, vernal pools, waterfowl migration stop-over sites and deer wintering areas, all of which are found in Kensington. Large wetlands like Great Meadows and active beaver ponds are valuable stop-over sites for migrating waterfowl in the spring and fall. Canada geese, wood ducks, black ducks, hooded mergansers, rails, bitterns, sedge and marsh wrens, mallards, and many other species rest, nest and feed here. Migrating geese also feed in the pasture field and corn stubble of Kensington cornfields in the spring and fall.

Seeps or seepage wetlands are generally small areas (less than ¼ acre) that occur where groundwater comes to the surface. These sites are the first to green-up in the spring and are frequented by a variety of wildlife for that reason. Dependent species in Kensington include deer, moose, turkey, salamanders, migrating birds including woodcock. They also provide critical habitat for rare plants and insects like the butterfly species that only feeds on Atlantic white cedar which grows in and adjacent to the Hogs Hill seepage swamp.

D. Wildlife Species in Kensington – The following tables list species of birds, mammals, amphibians, reptiles and fish observed in Kensington. The information is provided by Kensington resident George Gavutis, a noted naturalist and wildlife biologist.

Table 9
Bird Species Observed in Kensington
Observations made primarily by Kensington resident George Gavutis
Between 1973-2012

- * = Breeding Birds in Northeast**
- U = Uncommon in Kensington**
- R = Very Rare in Kensington**
- C = Common in Kensington**
- 1 = Bird observed in Kensington between 1973-2012**
- 2 = Bird breeds in Kensington**
- 3 = Bird observed just flying over Kensington**

BIRD NAME	1	2	3	BIRD NAME	1	2	3
LOON, Common* R	X		X	CRANE, Sandhill R	X		X
GREBE, Pied-billed* R	X	X		PLOVER, Black-bellied R	X		X
CORMORANT, Double-crested* U	X			KILLDEER* U	X	X	
BITTERN, American* R	X	X		YELLOWLEGS, Greater U	X		
BITTERN, Least* R	X	X		YELLOWLEGS, Lesser R	X		
HERON, Great Blue* C	X	X		SANDPIPER, Solitary U	X		
EGRET, Great* R	X			SANDPIPER, Spotted* U	X		
HERON, Green-backed* U	X	X		SANDPIPER, Upland*Pre-1970's R	X	X	
NIGHT-Heron, Black-cr.* R	X			SANDPIPER, Semipalmated R	X		
IBIS, Glossy* R	X		X	SANDPIPER, Least R	X		
GOOSE, Snow R	X		X	SNIPE, Common* U	X		
GOOSE, Canada* C	X	X		WOODCOCK, American* C	X	X	
DUCK, Wood* C	X	X		GULL, Ring-billed* U	X		
TEAL, Green-winged* U	X			GULL, Herring* C	X		
DUCK, American Black* U	X	X		GULL, Great Black-backed* R	X		
MALLARD* C	X	X		DOVE, Rock* U	X	X	
PINTAIL, Northern* R	X			DOVE, Mourning* C	X	X	
TEAL, Blue-winged* R	X			CUCKOO, Black-billed* U	X	X	

SHOVELER, Northern* R	X			CUCKOO, Yellow-billed* R	X	X	
WIGEON, American* R	X			SCREECH-OWL, Eastern* R	X	X	
DUCK, Ring-necked* R	X			OWL, Great Horned* U	X	X	
BUFFLEHEAD R	X			OWL, Snowy R	X		
DUCK, Mandarin R	X			OWL, Barred* C	X		
MERGANSER, Hooded* U	X			OWL, N. Saw-whet* R	X		
VULTURE, Turkey* C	X			NIGHTHAWK, Common* U	X		X
OSPREY* U	X	X		WHIP-POOR-WILL* R	X	X	
EAGLE, Bald* R	X		X	SWIFT, Chimney* U	X	X	
HARRIER, Northern* R	X		X	HUMMINGBIRD, Ruby-thr.* C	X	X	
HAWK, Sharp-shinned* U	X	X		KINGFISHER, Belted* C	X	X	
HAWK, Cooper's* C	X	X		WOODPECKER, Red-bellied* C	X	X	
GOSHAWK, Northern* R	X	X		SAPSUCKER, Yellow-bellied* U	X		
HAWK, Red-shouldered* U	X	X		WOODPECKER, Downy* C	X	X	
HAWK, Broad-winged* C	X	X		WOODPECKER, Hairy* C	X	X	
HAWK, Red-tailed* C	X	X		FLICKER, Northern* C	X	X	
HAWK, Rough-legged R	X		X	WOODPECKER, Pileated* C	X	X	
KESTREL, American* U	X	X		FLYCATCHER, Olive-sided* R	X		
MERLIN R	X		X	WOOD-PEWEE, Eastern* C	X	X	
PHEASANT, Ring-necked* U	X	X		FLYCATCHER, Alder* U	X	X	
GROUSE, Ruffed* U	X	X		FLYCATCHER, Willow* R	X	X	
TURKEY, Wild* C	X	X		FLYCATCHER, Least* R	X		
BOBWHITE, Northern* R	X			PHOEBE, Eastern* C	X	X	
RAIL, King* R	X			FLYCATCHER, Great. Cr.* C	X	X	
RAIL, Virginia* U	X	X		KINGBIRD, Eastern* C	X	X	
SORA* R	X			LARK, Horned* R	X		
MOORHEN, Common* R	X			MARTIN, Purple* R	X		
SWALLOW, Tree* C	X	X		PARULA, Northern* U	X		
SWALLOW, N. Rough-winged* R	X	X		WARBLER, Yellow* C	X	X	
SWALLOW, Bank* U	X	X		WARBLER, Chestnut-sided* U	X	X	
SWALLOW, Cliff* R	X	X		WARBLER, Magnolia* C	X		
SWALLOW, Barn* C	X	X		WARBLER, Cape May* R	X		
JAY, Blue* C	X	X		WARBLER, Black-throated Blue*U	X	X	
CROW, American* C	X	X		WARBLER, Yellow-rumped* C	X		
CROW, Fish* R	X			WARBLER, Black-throated Grn* C	X	X	
RAVEN, Common* U	X			WARBLER, Blackburnian* U	X	X	
CHICKADEE, Black-capped* C	X	X		WARBLER, Pine* C	X	X	
TITMOUSE, Tufted* C	X	X		WARBLER, Prairie* U	X		
NUTHATCH, Red-breasted* U	X	X		WARBLER, Palm* C	X		
NUTHATCH, White-breasted* C	X	X		WARBLER, Bay-breasted* R	X		
CREEPER, Brown* C	X	X		WARBLER, Backpoll* U	X		
WREN, Carolina* U	X	X		WARBLER, Blan-and-white* U	X	X	
WREN, House* C	X	X		REDSTART, American* U	X	X	
WREN, Winter* U	X	X		OVENBIRD* C	X	X	
WREN, Sedge* R	X			WATERTHRUSH, N.* R	X	X	
WREN, Marsh* R	X			WATERTHRUSH, Louisiana* R	X	X	

KINGLET, Golden-crowned* U	X		WARBLER, Kentucky* R	X		
KINGLET, Ruby-crowned* U	X		WARBLER, Connecticut R	X		
GNATCATCHER, Blue-gray* R	X	X	WARBLER, Mourning* R	X		
BLUEBIRD, Eastern* C	X	X	YELLOWTHROAT, C.* C	X	X	
VEERY* C	X	X	WARBLER, Hooded* R	X		
THRUSH, Swainson's* R	X		WARBLER, Wilson's* R	X		
THRUSH, Hermit* U	X	X	WARBLER, Canada* U	X	X	
THRUSH, Wood* C	X	X	TANAGER, Summer R	X		
ROBIN, American* C	X	X	TANAGER, Scarlet* C	X	X	
CATBIRD, Gray* C	X	X	CARDINAL, Northern* C	X	X	
MOCKINGBIRD, Northern* U	X	X	GROSBEAK, Rose-br.* C	X	X	
THRASHER, Brown* R	X	X	BUNTING, Indigo* C	X	X	
WAXWING, Bohemian R	X		TOWHEE, Rufous-sided* U	X	X	
WAXWING, Cedar* U	X	X	SPARROW, American Tree C	X		
SHRIKE, Northern U	X		SPARROW, Chipping* C	X	X	
STARLING, European* U	X	X	SPARROW, Field* U	X	X	
VIREO, White-eyed* R	X		SPARROW, Vesper* R	X	X	
VIREO, Solitary* U	X		SPARROW, Fox* U	X		
VIREO, Yellow-throated* U	X	X	SPARROW, Song* C	X	X	
VIREO, Warbling* U	X	X	SPARROW, Swamp* U	X	X	
VIREO, Philadelphia* R	X		SPARROW, White-throated* C	X		
VIREO, Red-eyed* C	X	X	SPARROW, White-crowned R	X		
WARBLER, Blue-winged* U	X	X	JUNCO, Dark-eyed* C	X		
WARBLER, Golden-winged* R	X	X	BUNTING, Snow R	X		
WARBLER, Tennessee* R	X		BOBOLINK* U	X	X	
WARBLER, Nashville* U	X		BLACKBIRD, Red-winged* C	X	X	
MEADOWLARK, Eastern* R	X	X	FINCH, House* C	X	X	
BLACKBIRD, Rusty* R	X		CROSSBILL, Red* R	X		
GRACKLE, Common* C	X	X	CROSSBILL, White-winged* U	X		
COWBIRD, Brown-headed* C	X	X	REDPOLL, Common U	X		
ORIOLE, Orchard* R	X	X	REDPOLL, Hoary R	X		
ORIOLE, Northern* C	X	X	SISKIN, Pine* U	X		
GROSBEAK, Pine* U	X		GOLDFINCH, American* C	X	X	
FINCH, Purple* U	X		GROSBEAK, Evening* R	X		
SPARROW, House* C	X	X	VULTURE, Black R	X		X

With climate change and global warming many new bird species are continuing to appear and breed in Kensington. Formerly southern birds like the cardinal, titmouse, mockingbird, and red-bellied woodpecker were not here a century ago but have spread north, utilizing our yards and bird feeders. Mississippi kites are just spreading here from the south and sandhill cranes are now spreading here to inhabit some of our restored forests. Eagles, ospreys, and herons have recovered from near extinction thanks to control of pesticides and laws protecting migratory birds.

Table 10
Mammal Species Observed in Kensington
Source: Kensington resident George Gavutis
C= Common, U = Uncommon, R= Rare

American Beaver (C)	Eastern Cottontail (C)	Red Squirrel (C)
Big Brown Bat (U)	Eastern Gray Squirrel (C)	River Otter (U)
Black Bear (R)	Eastern Pipistrel Bat (U)	Short-tail Weasel (C)
Norway Rat (U)	Fisher (C)	Southern Flying Squirrel (C)
Gray Fox (U)	Hairytail Mole (C)	Starnose Mole (C)
Muskrat (C)	Little Brown Myotis (Bat) (U)	Striped Skunk (C)
Porcupine (U)	Meadow Jumping Mouse (U)	Virginia Opossum (C)
Raccoon (C)	Meadow Vole (C)	White-footed Mouse (C)
Eastern Coyote (C)	Mink (C)	White-tailed Deer (C)
Eastern Chipmunk (C)	Red Fox (C)	Woodchuck (C)
Eastern Panther (R)	Bobcat (U)	Moose (R)
New England Cottontail (U)	House Mouse (C)	Red Bat (R)
Hoary Bat (R)	Short Tailed Shrew (C)	Pine Vole (U)
Northern Flying Squirrel (C)	Woodland Jumping Mouse (U)	Snowshoe Hare (U)

Beavers were nearly extirpated here until the mid-1900s when they made a quick recovery. Fishers, porcupines, otters and even deer were very rare until about that same time, as well, our first coyotes and opossums showed up also about that time and bobcats, bears and moose are just in the process of returning. A number of residents swear they have seen an Eastern panther, which very likely was an escaped or released pet, but they were native here as well as wolves, elk, and maybe even buffalo and caribou.

Table 11
Amphibians & Reptile Species Observed in Kensington
Source: Kensington resident George Gavutis
C= Common, U = Uncommon, R= Rare

Eastern Newt (Red-spotted) (C)	Gray Tree Frog (C)	Common Snapping Turtle (C)
Eastern Red-backed Salamander (C)	Green Frog (C)	Spotted Turtle (R)
Spotted Salamander (U)	Wood Frog (C)	Wood Turtle (R)
American Toad (C)	Eastern Painted Turtle (C)	Eastern Ribbon Snake (R)
Spring Peeper (C)	Blanding's Turtle (R)	Common Garter Snake (C)
Milk Snake (U)	Bullfrog (C)	Green Snake (R)
Pickerel Frog (C)	Musk Turtle (R)	Northern Water Snake (R)

Fishing is a popular hobby and Kensington’s ponds and brooks and fish are an important natural resource. It is important to keep in mind that in the Northeast many of our fish have been contaminated by mercury and other pollutants. Before eating any fish, consult with the most recent state advisories as to what is a safe consumption level.

Table 12
Freshwater Fish Species Present in Kensington
Source: Kensington resident George Gavutis

C= Common in Kensington

U = Uncommon in Kensington

Brook Trout, native and stocked (C)	Largemouth Bass (C) mostly in dug ponds
Rainbow Trout, stocked only (U)	Red fin Pickerel (U)
Pumpkinseed Sunfish, stocked only (U)	Horned Pout (C)
Golden Shiner (C)	Black Crappie (U)
American Eel (U)	Blue Gill (U)
Smallmouth Bass (U)	Yellow Perch (U)
Eastern Chain Pickerel (U)	

The red-fin pickerel is a small fish that seldom reaches more than six to eight inches in length in New Hampshire. It is very common in the Winkley Brook drainage but goes unnoticed and is seldom reported because few people are fishing in Kensington’s small brooks and don’t realize it is a rare species. Horned pout (catfish) used to be a very popular fish and people stocked many of the small ponds around town with them because they are easy to catch and very good eating. Our native brook trout are especially beautiful in their fall spawning colors. There are found in almost all of the small brooks in Kensington and are considered to be a real delicacy by fishermen that seek them out. Other fish species like the chain pickerel and brown trout, as well as the anadromous species like alewife and lamprey, are probably also found in the small portion of the Exeter River where Great Brook enters on the north boundary of Kensington. Winkley Brook and the Taylor River tributaries would also have sea run brook trout and other anadromous fish if there was a fish ladder on the dam located in Hampton Falls.

E. Invasive Species An Invasive Species is a plant, insect, and/or fungal species that is not naturally native to a particular region and has the ability to thrive and spread aggressively outside its natural range. The Invasive Species thrives and spreads in a new habitat due to the fact it has no natural predators (insects, diseases and/or foraging animals) that naturally keep its growth under control as they would in their own native habitat. Common invasive species observed in Kensington include Autumn Olive, Oriental Bittersweet, two species of Buckthorn, Eurasian Honeysuckle, Multiflora Rose, European and Japanese Barberry, Japanese Knotweed , Norway Maple, and Japanese Honeysuckle. Wetland invasive species include phragmites (giant reed), purple loosestrife and Eurasian milfoil. After a century of unabated invasion of our wetlands, purple loosestrife is finally being controlled by several insect species that will only feed on that species. Those insects control the plant in Europe and were not brought here until

recently. Phragmites is now the biggest concern as it rapidly spread from wetland to wetland and once established it overwhelms all the other native wetland plant species that our wildlife are dependent on and also create a real fire hazard.

It is important that those of us who reside in Kensington be informed and aware of invasive species (plants, insects and fungal species) that have the potential to destroy and displace those natural resources that are vital to our biodiversity. According to the New England Wildflower Society, nearly 1/5th of New England's 3,000 plant species are in danger of disappearing from our region. The Nature Conservancy estimates that 42% of all species on the Federal Endangered Species Lists are listed partly due to the effects of invasive species (and for 18%, invasive species are the sole reason for their listing). According to the US Department of Agriculture website, <http://www.invasivespeciesinfo.gov/>, over \$100 million dollars a year is spent in the United States combating invasive plants in wetlands alone. Rich, diverse plant communities can become barren, inhospitable expanses of invasive plants with little value to wildlife. Invasive plants may even deplete groundwater. The public must be educated to buy plants wisely and to control existing invasive plants

Without any natural predators to prevent its spread, the invasive species, particularly in the case of plants, will put extreme pressure on native plants and animals. Ultimately the invasive plant will alter native habitats and reduce biodiversity by choking out native vegetation, threatening rare and endangered species and degrading wildlife habitat. With the loss of native vegetation and wildlife habitat also comes the loss of a number of our native animal, bird and insect species that depend on the native habitats to survive. Invasive species present the worst threat in fields reverting to forests and in wetlands, and fire prone areas where rare native plants are found. Invasive plants:

- Produce large numbers of new plants each season, often from root systems;
- Tolerate many soil types and weather conditions;
- Spread easily and efficiently, usually by wind, water, or animals;
- Grow rapidly, allowing them to displace slower growing plants;
- Spread rampantly when they are free of the natural checks and balances found in their native range.

In 2000, the State of New Hampshire enacted legislation under House Bill 1258-FN which "requires the Commissioner of Agriculture, Markets, and Food to conduct research and educational activities which address the effects of invasive plant, insect and fungal species upon the state". As a result of this legislation, the New Hampshire Invasive Species Committee was formed and the species listed in Table 14 were no longer legal to sell.

Most of the native North American chestnut trees, which were one of the primary and most valuable trees for both wildlife and humans, were killed early in the last century by a blight introduced from overseas. You can still find young chestnut sprouting from the roots of their once giant parents in many woodlots in Kensington. Most are killed by the blight well before they reach maturity but a few chestnut trees up to twelve inches in diameter have been located

and found to be bearing viable nuts. Scientists are also developing seedling from resistant chestnuts and there is a glimmer of hope that our grandchildren may get to see this species return to our forests. Our butternut (hickories) have been a valuable and prized tree in many yards and along roads like Moulton Ridge Road due to their delicious nut but it has recently been attacked by a foreign blight, similar to the chestnuts, and nearly all our butternut trees are now dying and are showing no sign of re-sprouting from roots, unlike the chestnut.

Table 13
Prohibited Plant Species in New Hampshire
Source: NH Dept. of Agriculture, Markets and Food

Tree of Heaven (<i>Ailanthus altissima</i>)	Fanwort (<i>Cabomba caroliniana</i>)
Garlic Mustard (<i>Alliaria petiolata</i>)	Oriental Bittersweet (<i>Celastrus orbiculatus</i>)
European Barberry (<i>Berberis vulgaris</i>)	Black Swallow-wort (<i>Cynanchum nigrum</i>)
Flowering Bush (<i>Butomous umbellate</i>)	Purple Loosestrife (<i>Lythrum salicaria</i>)
Pale Swallow-wort (<i>Cynanchum rossicum</i>)	Parrot Feather (<i>Myriophyllum aquaticum</i>)
Brazilian elodea (<i>Egeria densa</i>)	Variable Milfoil (<i>Myriophyllum heterophyllum</i>)
Autumn Olive (<i>Elaeagnus umbellate</i>)	Europ. Water-Milfoil (<i>Myriophyllum spicatum</i>)
Giant Hogweed (<i>Heracleum mantegazzianum</i>)	European Naiad (<i>Najas minor</i>)
Hydrilla (<i>Hydrilla verticillata</i>)	Yellow Floating Heart (<i>Nymphoides peltata</i>)
European Frogbit (<i>Hydrocharis morus-ranae</i>)	Common Reed (<i>Phragmites australis</i>)
Water-flag (<i>Iris psuedacorus</i>)	Japanese Knotweed (<i>Polygonum cuspidatum</i>)
Blunt-leaved Privet (<i>Ligustrum obtusifolium</i>)	Curly-leaf Pondweed (<i>Potamogeton crispus</i>)
Showy Bush Honeysuckle (<i>Lonicera x bella</i>)	Common Buckthorn (<i>Rhamnus cathartica</i>)
Japanese Honeysuckle (<i>Lonicera japonica</i>)	Glossy Buckthorn (<i>Rhamnus frangula</i>)
Morrow's Honeysuckle (<i>Lonicera morrowii</i>)	Multiflora Rose (<i>Rosa multiflora</i>)
Tartarian Honeysuckle (<i>Lonicera tatarica</i>)	Water Chestnut (<i>Trapa nutans</i>)
Burning Bush (<i>Euonymus alatus</i>)	Japanese Barberry (<i>Berberis thunbergii</i>)
Norway Maple (<i>Acer platanoides</i>)	

More information on prohibited plant species may be found at the following website:
http://www.nh.gov/agric/divisions/plant_industry/

Table 14
Prohibited Insect Species in New Hampshire
Source: NH Dept. of Agricultural, Markets and Food

Honeybee Tracheal Mite (<i>Acarapis woodi</i>)	Asian Longhorned Beetle (<i>Anoplophora glabripennis</i>)
Hemlock Woolly Adelgid (<i>Adelges tsugae</i>)	Cedar Longhorned Beetle (<i>Callidellum rufipenne</i>)
City Longhorned Beetle (<i>Aeolesthes sarta</i>)	Japanese Beetle (<i>Popillia japonica</i>)
Siberian Silk Moth (<i>Dendrolimus sibiricus</i>)	Viburnum Leaf Beetle (<i>Pyrrhalta viburni</i>)
Elongated Hemlock Scale (<i>Fiorinia externa</i>)	European Chafer (<i>Rhizotrogus majalis</i>)
Redhaired Bark Beetle (<i>Hylurgus lingniperda</i>)	Nun Moth (<i>Symantria monacha</i>)
European Spruce Bark Beetle (<i>Ips typographus</i>)	Brown Spruce Longhorn Beetle (<i>Tetropium fuscum</i>)
Asian Gypsy Moth (<i>Lymantria dispar</i>)	Varroa Mite (<i>Varroa destructor</i>)

Hemlock wool adelgid is a destructive organism that has been well established to the south of here and has spread north with our warming climate. It has just been identified in Kensington in 2012 in both the Charles Hodges and Meeting House Hill conservation areas, and is expected to really devastate our hemlocks. Some people, anticipating the worst, have begun to plant our native red spruce, which is also shade tolerant like hemlock, to maintain privacy screening, which hemlock has often been used for.

Recommendations to Protect Natural Communities and Wildlife Habitat:

Kensington’s wildlife, and the habitat that it requires, is an important component of the rural character of the town that is so important to its residents. Because the habitat maps highlight large, unfragmented blocks of land and wetlands, conserving key wildlife habitats will also work towards preserving rural character and water quality.

- Partner with land conservation organizations and surrounding municipalities in the region to protect critical areas in Kensington.
- Develop and adopt a Conservation Overlay Zoning District designed to minimize the impacts of development on wildlife habitat, habitat migration corridors, water quality, and water quantity by requiring Open Space Subdivisions within the Conservation Overlay Zoning District.
- Support the protection of riparian corridors by increasing wetland buffers to 100 feet and enforcing regulations.
- Continue to protect large parcels of unfragmented land from development. Increase the percentage of current use change tax devoted to the Conservation Fund to 100%.

- Minimize impacts to significant habitat during development by requiring that a natural resource inventory be completed prior to subdivision approval and by code enforcement during construction.
- Apply principles of conservation design to minimize the impacts of development and preserve natural undeveloped lands.
- Work with surrounding communities to identify and conserve wildlife corridors.
- Educate residents about the invasive species and the need to prevent their establishment in Kensington.
- Encourage use of native species in development.

VII. Conservation Land

Kensington has several parcels of land that have been permanently protected from future development due to the actions taken by landowners, land conservation organizations, the Town, and the State of New Hampshire. Land has been protected in a variety of ways. Some parcels have been purchased by the Town or donated to the Town to remain undeveloped and for public use. Some parcels are privately owned and the right to develop the land has been removed and donated or sold to the Town or a land conservation organization. Public access on privately owned parcels may be restricted. Map 8 depicts conservation land in Kensington.

What is a conservation easement? A conservation easement deed is a voluntary land protection agreement that is permanent and legally binding and made to protect the land's significant natural features such as drinking water resources, farmland, scenic views, wildlife habitat, or hiking, biking and walking trails. The agreement is made between a landowner and a qualified conservation organization or public agency that restricts use of the land to protect its significant natural features.

What uses are permitted or not permitted on conservation easement land? The uses are negotiated between the landowner and conservation organization and are permanent and legally binding. Typical permitted uses include agriculture, forestry, noncommercial outdoor recreation, wildlife habitat management. Typical prohibited uses include subdivision and development of the conserved land, mining and excavating, filling or disturbing wetlands, and disposal of manmade waste or hazardous materials.

How are uses monitored and enforced? A qualified non-profit conservation organization, such as the Rockingham County Conservation District, Southeast Land Trust of New Hampshire, The Nature Conservancy, or the Society for the Protection of NH Forests, ensures that the property is protected in perpetuity. The responsible conservation organization has the authority and

obligation to ensure that the natural resources are protected by regularly inspecting the site to make sure the property is maintained in compliance with the easement.

Are there financial benefits for the landowner to donating a conservation easement? Yes, by donating a conservation easement the land owner may benefit in several possible ways. The land owner may be able to reduce federal income, estate, and gift taxes. The donor of a conservation easement maintains ownership and use of the land and has the right to sell it with the permanent conservation agreement.

How does Kensington benefit from supporting conservation easements? Conservation to preserve the land that cleans our air and drinking water, supports local agriculture, absorbs storm water and carbon dioxide, provides scenic beauty and recreational opportunities benefits all Kensington residents. Towns support conservation easements to protect the town from the tax burden created by residential and commercial development that have been shown to raises taxes through the increase in infrastructure, education, and community services.

Conservation easements on private land. Kensington is fortunate to have many landowners who have placed conservation easements on their land. The landowner maintains control and use of the land but the use has to adhere to the easement criteria. Since there are restrictions on the use of the land, the value of the land has been effectively decreased as development capabilities have been removed. Agriculture, forestry, and recreation are allowed within the restriction of most easements and by permission of the landowner. If the property is sold, the easement criteria remain in the deed and transfer with the sale.

Conservation easements on public land. Public land under a conservation easement is owned and controlled by the public entity and is required to adhere to the easement's criteria. As an example, a large tract of land is owned by a municipality. A conservation easement has been put in place that restricts development, but down allow for agriculture and/or forestry as long as supporting plans are in place. What this means is that the town government can use this land for any town function supporting the forest management (timber harvesting, grassland expansion, etc.) agriculture (community garden, crop planting, haying, etc.) within the definitions of the easement. The town cannot use the land for building of commercial or government structures, parking lots or any other function not allowed by the easement.

The Town has raised funds to work with landowners to conserve land by selling bonds and by using 25% of the current use change tax.

Charles Hodges Conservation Area – The Charles Hodges Conservation Area encompasses 178 acres of forest, fields, and wetlands on Stumpfield Road. Consulting Forester Charles Moreno prepared a Forest Management Plan for the property in February 2003. The purpose of the Plan was to specify forest and natural resource management practices for the next 40 years. Recommendations are based on Kensington's objectives to enhance the forest and wildlife resources of the property while encouraging responsible recreational use of the land by the public.

Table 15
Conservation Land in Kensington
Source: Town Records

Easement Holder = Town or conservation organization responsible for monitoring land use restrictions defined in the conservation easement
 SPNHF = Society of Protection NH Forests
 SELTNH = Southeast Land Trust of New Hampshire
 RCCD = Rockingham County Conservation District
 ? = Conservation Commission researching records

Grantor/ Parcel Name	Privately Owned or Town Owned	Easement Holder	Acres	Date Recorded at Registry of Deeds	Tax Map and Lot
Judith Pease Great Meadows	Private	Town	5.3	12/9/1982	17-18
Daigneault- Dagostino	Private	Town	6.8	11/7/1986	5-28-4
	Town		5.0	4/1/1987	17-24-1
Charles Hodges	Town	SPNHF	178.4	2/4/1987 or 4/12/1987	7-20-2A
Avery	Private	SPNHF	38.0, plus 15.0 in Hampton Falls	12/30/1996	15-6
Jessie York	Town	SELTNH	9.8	6/12/1997	10-15,16,18
Alan Tuthill and Kathyrn Fessenden	Private	SELTNH	90.0	7/15/1993 12/29/1993	13-17,18
Alan Lewis, KLC	Private	RCCD	33.97	6/30/1999	5-22,24,25,26; 6-73
James and Joan Webber	Private	SELTNH	34.0	11/3/1999	6-39-4
Briggs/Pine-tree Trust	Private	SPNHF	148.5, plus 27.5 in South Hampton	6/27/2000	4-16
Asset Title Holding/ Great Brook Conservation Area	Town	SELTNH	67.3	8/21/2000	13-7
Stonemark Management Crop.	Private	Town	51.1	2000	4-44
Kazmarek-Heinlen- Prescott Meeting House Hill	Town	SELTNH	38.0	12/21/2000	9-9
Poisson-Crowell Meeting House Hill	Town	SELTNH	1.3	12/18/2000	12-5-1,6
Nora Tuthill	Private	SELTNH	26.0, plus 26.0 in Exeter	10/2/2002	17-33

Lampert Trust	?	?	9.8	?	?
Steve and Ann Smith	Private	SELTNH	73.8	12/15/2004	10-3,4
Carl Rezendes	Private	SELTNH	5.3	12/15/2004	10-20
Peter Sawyer	Private	SELTNH	15.3	12/15/2004	10-17
Richard Parker	Private	SELTNH	54, plus 37 in Hampton Falls	12/30/2004	15-10,11
Carpenter	Private	SPNHF	96	8/2/2004	15-7
Davis Finch and Jean Topping	Private	SELTNH	2.3, plus 136.5 in East Kingston	12/20/2004	1-4
Barbara Boudreau and Frederick McKim Yarley	Private	SELTNH	24	9/29/2005	11-4
Marilyn Bott	Private	RCCD	3.7	2005	1-3
James Query and Elizabeth Bates	Private	SELTNH	39	12/1/2007	15-1
Paul and Marion Kimball		RCCD	147.73	3/26/2008	16-2,3
Nancy and George Cole		RCCD	41.12	6/?/2008	7-12
Sargent	Town	SELTNH	10.28	11/18/2010	9-9

Recommendations regarding Conservation Land:

- Increase the funding for the purchase of land and/or conservation easements by utilizing 100 % of the change of use tax (current use) funds collected by the Town and other funding methods.
- Promote the many benefits of land conservation to land owners through education via the town newsletter and website and workshops with conservation organizations.
- Work closely with landowners interested in conserving their land and work with conservation organizations to provide technical assistance.
- Prioritize properties for conservation.

VIII. Current Use Assessment

NH RSA 79-Current Use Assessment provides a property tax incentive to all qualifying landowners who agree to maintain their land in an undeveloped condition. Current Use is the cornerstone of the state's land conservation efforts, with over half the land in New Hampshire is enrolled in this valuable program. A review of 2011 property tax cards for the Town identified 126 properties enrolled in Current Use, totaling 4,065 acres, slightly more than half of the town's total acreage.

The minimum requirements for land to be enrolled in the Current Use program are:

- 10 or more acres of land that is undeveloped and with no structures;
- A tract of wetland of any size less than 10 acres;
- A certified Tree Farm of any size;
- A tract of undeveloped land of any size that is actively devoted to the growing of agricultural or horticultural crops have an annual gross income from the sale of crops totaling at least \$2,500.

It is important to note that land enrolled in current use is not deed restricted and may be eligible for development. For more information, visit www.nhspace.org

IX. Trails and Recreation on Town Owned Land

A trail network exists throughout Town owned land, allowing recreational, non-motorized, sustainable activities such as biking, snowshoeing, and cross country skiing. There are two main trails networks on Town owned land on the Charles Hodges property and Meeting House Hill. Access to the trails is available from French's Lane, Osgood Road, Stumpfield Road, and Moulton Ridge Road.

Recommendations:

- Promote knowledge of public trails through guided walks.
- There is a history of trail use in Kensington. Some trails cross public and private land. An effort should be made to obtain approval from private land owners to continue use of some of those trails as has already been done in some areas for snowmobiles.

X. Regional and Statewide Natural Resource Inventories

There have been two reports completed in New Hampshire that provide communities with useful information regarding the types and locations of wildlife and the habitats required by wildlife. Information from these reports is included in this NRI to provide Kensington with information that may be useful in land use planning and conservation.

New Hampshire Fish and Game Wildlife Action Plan (WAP) - The 2005 NH Wildlife Action Plan (WAP) is the most comprehensive wildlife assessment ever completed in New Hampshire, identifying 123 species and 27 habitats across the state in greatest need of conservation. The purpose of the WAP is to provide decision makers with information that encourages sustainable development in sensitive wildlife areas, and considers proactive strategies for land protection. The WAP may be found at the following website: http://www.wildlife.state.nh.us/Wildlife/wildlife_plan.htm

Wildlife habitat is categorized in the following ways in the WAP:

- Tier 1 – Highest quality wildlife habitat in NH
- Tier 2 – Highest quality wildlife habitat in a biological region, geographical areas with similar physical characteristics that influence biology
- Tier 3 – Supporting landscapes, described in the Plan as follows, “Supporting Landscapes consists of the upland part of the watershed for surface waters, some very intact forest blocks, some known locations of WAP species and some locations of exemplary natural communities”

Table 16
Summary of Wildlife Action Plan Habitat Tiers
2005 Plan, data updated 2010

Tier 1	1,247 acres 16.2% of land in Kensington
Tier 2	500.3 acres 6.5% of land in Kensington
Tier 3	1,769.1 acres 23.1% of land in Kensington

It is important to note that over 16% of land in Kensington is classified by NH Fish and Game as Tier 1 – the highest quality habitat in the state

Land Conservation Plan for New Hampshire’s Coastal Watersheds - The overarching goal of the Land Conservation Plan for New Hampshire’s Coastal Watersheds (Plan) is to focus conservation on those lands and waters that are most important for conserving living resources – native plants, animals, and natural communities – and water quality in the coastal watersheds. The Plan is intended to achieve the following purposes:

- Identify and describe a portfolio of areas that represent the best remaining opportunities to conserve the critical ecological, biological, and water resources of NH’s coastal watershed.
- Identify and describe a set of voluntary and regulatory land conservation strategies available for protecting the important areas.

To develop the Coastal Conservation Plan, data from the WAP as well as other sources were used and resulted in 75 Conservation Focus Areas in the 46 communities in the coastal watershed. Kensington is part of five Conservation Focus Areas, described below. The Land Conservation Plan for New Hampshire's Coastal Watersheds may be found at the following website: <http://www.rpc-nh.org/coastal-conservation.html>

- *Great Meadows Conservation Focus Area* – The Great Meadows Conservation Focus Area encompasses 1,400 acres in Kensington and Exeter. The focus area includes two plants of conservation concern, Climbing Hempweed and Large Bur-reed, two animals of conservation concern, an abandoned Great Blue Heron rookery and the Least Bittern. Significant wildlife habitats include floodplain forest, grassland, marshland, and peatland. Exemplary natural communities and systems include Appalachian oak-sugar maple forest, swamp white oak floodplain forest, and tall graminoid emergent marsh. The Sedge Wren was last found in the Kimball Road area. The focus area also includes 320 acres of prime farmland and 40 acres of farmland of statewide importance.
- *Upper Great Brook Conservation Focus Area* – The Upper Great Brook Conservation Focus Area encompasses 540 acres in Kensington and East Kingston. Significant wildlife habitats in the focus area are grassland, marsh and peatland. Swamp white oak floodplain forest also exists here on several properties. There are 145 acres of prime farmland and 65 acres of farmland of statewide importance.
- *Taylor River and The Cove Conservation Focus Area* – The Taylor River and The Cove Conservation Focus area encompasses 2,420 acres in Kensington, Exeter, Hampton Falls and Hampton. The focus area includes one plant of conservation concern, the small-crested Sedge, and one animal of conservation concern, an abandoned Great Blue Heron rookery. Significant wildlife habitats include floodplain forest, grassland, marsh, and peatland.
- *Upper Taylor River Conservation Focus Area* – The Upper Taylor River Conservation Focus Area encompasses 440 acres in Kensington and Hampton Falls. Significant wildlife habitats include grassland, marsh and peatland. The focus areas includes 85 acres of prime farmland soils and 101 acres of farmland of statewide significance.
- *Muddy Pond Conservation Focus Area* – The Muddy Pond Conservation Focus Area encompasses 160 acres in Kensington. The Focus Area includes one plant of conservation concern, the Bulbous Bitter Cress, and two animals species of conservation concern, the Spotted Turtle and the Redfin Pickerel. Significant wildlife habitats include grassland, marsh, quaking bog and peat. Exemplary natural communities and systems include circumneutral seepage swamp. This focus area also include the Winkley Brook drainage.

XI. Climate Change and Adaptation Planning

Kensington, like communities across New Hampshire and the county, is experiencing a change in climate. These changes are most evident in increased storm intensity. A 2007 report by the Union of Concerned Scientists, *Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions* included a six-page summary of specific climate impacts for New Hampshire. Many of the impacts are similar to those identified for the entire Northeast region. The UCS indicates that as global warming continues, New Hampshire will see:

- Increases in the number of days over 90° F from ten per year between 1961 and 1990 to between thirty and seventy days per year by late century.
- Increases in the number of days over 100° F from one per year between 1961 and 1990 to between six and twenty-three days per year by late century.
- Increases in winter precipitation of about 20 to 30%, featuring less snow and more rain or mixed precipitation.
- Decreases in winter snow season of 16 to 50%.
- Earlier river and lake-ice breakup.
- Earlier blooming dates for lilacs, dogwoods, willows, magnolias, and other plants.
- Increases in major flooding events.
- Increased frequency of short-term (one to three months) drought, with annual droughts under the higher emissions scenario and droughts every two to three years under lower emissions scenarios.
- Increased length of the growing season.
- Increased frequency of about 400% of poor air quality days in larger cities.

In addition, maple season has moved from starting traditionally in early March to well into April to starting by late January and sap flowing off and on all winter. Some years with little or no snow the shorter maple season is ending as early as March. These impacts have the ability to affect the economy and tourist industry in the state, quality of life, and overall regional character.

The NH Department of Environmental Services has compiled the following list of impacts to natural resources as a result of climate change:

Cold Water Fisheries - An Environmental Protection Agency (EPA) study for New England indicated that some states could potentially lose all habitats important for cold-water fish. Estimates as high as a 50% loss was predicted for northern New Hampshire, and even higher in southern New Hampshire especially for native brook trout. The temperatures of streams in New Hampshire may increase to levels exceeding tolerances for most cold-water fish such as native brook trout, and introduced brown, and rainbow trout. Warm water fish may have difficulty moving into vacated cold-water fish habitats because they are unable to tolerate fast stream rates. Temperature is critical to reproduction in many cold-water fish species. Thus, even though some adult fish may tolerate higher stream temperatures, they will not reproduce successfully.

Forest Resources - Disturbances to tree health, such as north and pest and pathogen outbreaks, flooding, and wind damage are expected to increase, potentially resulting in the death of a large number of trees and forests. Extreme events such as periods of winter thaw followed by intense cold, spring and summer drought, and summer heat stress, have been associated with die-backs and declines in several northern hardwood species (e.g., Sugar Maple, White Ash, Yellow Birch) in New England. The expected rise in the frequency of these weather events also threatens the health of New Hampshire's forests. UCS reports that a higher emissions scenario could create a climate completely unsuitable for existing spruce/fir forests and cause a significant decline in maple, beech, and birch forests. Areas suitable for New Hampshire's hemlock trees could shrink by 20 to 40% by late century. In general, ecological models predict that warmer temperatures and extreme weather events associated with climate change would move optimal conditions for the growth of northern hardwood forest species northwards by at least 100 to 300 miles.

Agricultural Resources - The increased frequency of drought would have a detrimental effect on the small but increasingly vibrant and growing agriculture sector in New Hampshire. Increasing summer temperatures and heat stress could reduce crop yields and quality, especially for cool weather crops and non-drought resistant species. Northward expansion of certain varieties of weeds and agricultural insect and blight pests puts additional pressure on farmers to use pesticides and herbicides or places the burden of additional labor on organic farms that choose not to.

Wetlands- Climate change is predicted to result not only in an increased frequency and intensity of severe storm events, but also in longer, more frequent drought periods in the late summer and early fall. Wetland areas would be vulnerable to both types of weather extremes. In the event of severe storms, wetland areas are likely to be hit with flash floods. This could cause erosion and damage to fragile areas of wetlands, such as stream banks or water inlets to lakes and ponds. Flash flood, along with increasing development, would also bring a great deal of silt and sediment into the wetlands, increasing their turbidity and decreasing their functionality. This is happening now in some of our streams and brooks and wetland basins, which are now serving as silt detention basins. An increase in the amount of water entering wetlands may also cause them to reach their water-holding capacity, breaching their boundaries and exacerbating flood problems further downstream. Conversely, wetlands are

also in danger of decreasing in number and size. With an increase in droughts and a decrease in the amount of water recharging the wetland areas during the summer and fall months, some of them may become severely degraded or simply dry up. Since wetlands assist in stormwater filtration and flood control, the impact development has upon existing wetlands should also be considered. In general, the loss of natural wetlands tends to be a result of development that removes wetland areas and increases impervious surfaces. As changes in climate occur, the severity of the degradation of wetlands is expected to increase as a result of previous human activity.

Plant Communities - The natural plant communities currently found in and around Kensington are greatly threatened by the effects of climate change. Some plant species, such as the sugar maple, are already dying off and shifting northward because they cannot adapt to a warmer climate zone. If the climate in Kensington becomes warmer, which is a predicted result of climate change, northern plant species are threatened with death in the southern portion of their natural growing climate ranges. Kensington's plant communities are also vulnerable to the introduction of new pests—pests that were once controlled (at least to some extent) by cold winters. Thus, invasive exotic plants (e.g., phragmites, purple loosestrife, Japanese knotweed) already present in New Hampshire may be able to invade more vigorously. Similarly, insects, such as the hemlock wooly adelgid, may be able to travel northward and survive. Pests such as this bug have been known to change an entire forest ecosystem by killing the trees they live on. Kensington's natural communities are also vulnerable to extreme weather events due to the damage, or even mortality, they cause to trees and plants. Ice storms can cause tree limbs and the crowns of trees to break, which can result in the death of a tree. Similarly, erratic freeze-thaw patterns leave Kensington's plants vulnerable to leaf mortality or a reduction in reproduction success because their buds and flowers could be damaged by cold temperatures and therefore fail. An early spring thaw followed by a snow storm, for example, could kill buds that had "mistakenly" begun to open. This type of event is happening with increase frequency already.

Animal Communities - Animal species depend directly on the habitats in which they live. With so many changes likely to occur to Kensington's plant communities, the animals that are dependent on them are also vulnerable. Species dependent on wetland areas, hemlock stands, etc., will be vulnerable to a loss of habitat. Similarly, animals will be vulnerable to a loss of food sources, not only because of the disappearance of some plant species but also because of a difference in food availability patterns. For example, some short lived plants that provide animals with the food they need to survive in the spring after a long, cold winter may begin to bloom and die before the animals are ready to forage on them. Animals, especially birds, migrating to and through Kensington may miss bugs that appear during the spring thaw because their migration timing is dependent on the availability of light rather than the increase in spring temperatures. An increase in erratic weather may also result in higher mortality rates of animals as a direct result of quick changes in temperature or severe storm events. This is

especially true of young animals. For example, an increase in the frequency and intensity of storms may result in spring weather that is too wet and cold for young bird species to live through. Some animals will likely be affected by these impacts more than others and this will only serve to further disrupt the natural, ecological balance.

XII. Conclusion

Kensington enjoys generous natural resources which will continue to thrive under proper stewardship. Given its unique setting among communities that have experienced much greater development, residents' actions now will make sure that these resources flourish and endure. This effort will reap everlasting benefits for the town and the entire region.

The Kensington Conservation Commission recommends the following actions to further protect natural resources in the community:

- Establish a Conservation Overlay Zoning District requiring open space subdivisions within the District.
- Increase code enforcement of existing and future land use regulations.
- Require a 100' buffer to protect wetlands.
- Increase the funding for the purchase of land or conservation easements by utilizing 100% of the change use tax.
- Reduce road width requirements for subdivisions to reduce impervious surfaces and the resultant stormwater runoff.

The Kensington Conservation Commission looks forward to working with the Board of Selectmen, the Planning Board, and residents on the protection and stewardship of the natural resources in the community.