Hillside forested wetlands are an important natural resource in Lyme. Due to Lyme's mountainous topography and large areas of upland soils, large expansive wetland complexes are not common. Even small wetlands are still important sources of water retention, filtration and wildlife habitat. These wetlands are often found along the hillsides which are potential residential building sites and future field verification should be considered to assess and delineate their locations.

There are two studies completed recently that could be built upon and used as reference for future work:

1. '*A Comparative Evaluation of Five Wetlands for the Town of Lyme, NH'*, prepared by Plymouth College students- Tim DeGraff, and Dean Turner in cooperation with the University of New Hampshire Cooperative Extension, 1998.
   (Encompassing areas of Mud Pond, Town Forest, Clay Brook, Wilder Brook, and Trout Brook.)
2. '*Post Pond, Lyme, NH: Wetland Evaluation and Impact Assessment'*, prepared by Normandeau Associates, Inc., December 2006.
   (A detailed analysis of Post Pond water levels and the effects on its wetlands.)

These reports can be reviewed by contacting the Town Office and/or Library. The Post Pond study can also be viewed in this report - Appendix V.

Permanent Openings

As farming was found to be more productive in areas such as the mid-west, it became increasingly less popular in Northern New England. As a result, most of New Hampshire has experienced a loss of working farms. In the height of the Agricultural Era, 85% of Lyme was cleared land. Some portions of Lyme, particularly in the eastern portion, where rugged terrain and ledge areas are located, were never cleared for farmland. The western portion of Lyme with its flatter, richer riparian floodplains along the Connecticut River was extensively farmed. There are some remaining agricultural practices, dairy, equine, and beef, but on a smaller scale involving less of the potential farmland acreage than the Town has to offer. This overall loss of working farms has caused a significant decrease in the percentage of non-developed, permanent

openings over the past 50 years, and New Hampshire is now encouraging landowners to create or maintain permanent openings as important wildlife habitat. For a review of current farming practices in Lyme, locations, and acreages, please refer to the attached table in Appendix II.

Permanent openings are dominated by grasses, forbs, wild flowers, brambles and fruiting shrubs. It is estimated that they provide required habitat for about 22% of New England's wildlife species and are seasonally important for nearly 70% of species. Insects are not accurately incorporated into these figures, but a large number of these species occupy or use openings. White-tailed deer, black bears, numerous rodent species, such as deer mice (*Peromyscus maniculatus*), meadow voles (*Microtus pennsylvanicus*), shrews (*Soricidae* spp), and woodchucks (*Marmota monax*), commonly feed on the vegetation present in these habitats, and carnivores from weasels to coyotes in turn feed on these species. Permanent openings are heavily used by bird species as feeding and nesting sites, specifically by the eastern bluebird (*Sialia sialis*), and northern harrier (*Circus cyaneus*), which are both species of concern in New Hampshire. They also create important edge habitat utilized by numerous species. Wherever an open area meets the forest, the area of transition will attract the largest diversity of species, both plant and animal. Generally, there will be species adapted to permanent openings, those adapted to forested habitat, and those who specialize in the transition zone area, who will frequent these edge habitats. For example, many bird species that feed in openings are known to frequently nest within the edge habitat because there is typically more structural diversity and cover.

With the decline of agricultural practices in Lyme and throughout all of New England, large open fields such as this one off River Road are in short supply. These permanent openings are a frequently utilized habitat type by a diversity of wildlife species and New Hampshire is encouraging landowners to create and maintain them.

Though the positives of former farming landscapes far outweigh the negatives, it is often overlooked that vestigial unused fencing can be prohibitive to some wildlife travel and occasionally cause harm to wildlife. When possible it is a good practice to remove non-functioning fencing, such as barb wire and woven sheep fence.

Agricultural fields are not the only source of permanent openings in Lyme. One non-traditional area in Town that provides permanent opening habitat is the Dartmouth Skiway (about 150 acres). Also several landowners are routinely brush-hogging former pastureland and hayfields to maintain them as permanent openings. These areas provide the characteristics of an open area and are surrounded by forested and wetland habitats, making them attractive for numerous wildlife species.

Currently Lyme has about 2,560 acres of permanent openings which make up 7.3% of the Town's landscape. This percentage is less than, but close to New Hampshire's State average of 10% permanent openings. A total of 450 different openings were documented during this project ranging in size from less than ¼ of an acre to just over 90 acres. Diversity in sizes is a good feature to maintain in permanent openings because varying sizes are preferred by different species. For example, northern harriers (*Circus cyaneus*) prefer larger openings while feeding, yet snowshoe hare (*Lepus americanus*) are more likely to feed in smaller openings where cover is more readily available. There are other permanent openings throughout Lyme that are too small to be mapped into the Town's overall acreage of permanent openings, such as lawns near homes and seeded woods roads. These openings, especially those in more isolated parts of Town, are still important habitat and help maintain Lyme's plant and wildlife diversity. A goal to retain, and ideally increase, permanent openings would be beneficial to the diversity of wildlife and vegetation throughout the Town.

Many former hayfields such as this one are no longer cropped each year and will quickly revert back to shrubs, saplings, and eventually forest if not cut.

There are miles of old stonewall – evidence of former pasturelands in Lyme that have reverted back to forestland.

Remnants of an old mill located near Trout Pond.
(Photo provided by John Skelly)

Forested Lands

Roughly 90% of the 35,215.8 acres of land in Lyme is forested lands. Common tree species that make up these forested lands are white pine (*Pinus strobes*), eastern hemlock, red oak (*Quercus rubra*), yellow birch, white birch (*Betula papyrifera*), red maple, sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), black cherry (*Prunus serotina*), poplar (*Populus* spp.), red spruce (*Picea rubens*), American basswood (*Tilia americana*), and balsam fir (*Abies balsamea*).

Forested areas include hardwood stands, softwood stands, and mixed hardwood and softwood stands. Approximately 5,773 acres of forested land, approximately 16.4% of Lyme's land mass, are dense softwood stands. These stands range in size from around an acre to nearly 700 acres. The largest softwood stand is in the northeastern portion of the town and continues into neighboring town of Dorchester. Most of the stands are isolated, but a few are connected allowing for excellent winter cover and travel corridors for wildlife. Dense softwood stands are an important habitat type to various wildlife species. They provide important cover and foraging habitat during harsh winter conditions by reducing snow accumulations and wind speeds. Therefore animals such as red squirrels (*Tamiasciurus hudsonicus*), snowshoe hare, ruffed grouse (*Bonasa umbellus*), and white-tailed deer are often found utilizing them during the winter months. White-tailed deer are not well adapted for traveling in and dealing with deep snow conditions and hence require dense softwood stands in order to survive New Hampshire's harsher winters. When they congregate in these stands they are referred to as winter deer yards. For the stand to be considered a deer yard two basic elements must be met: (1) A core area is identified by concentrations of dense softwoods, and; (2) Mixed hardwood and softwoods adjacent to, or within the core area will provide accessible forage. In 1985 the Lyme Conservation Commission mapped out 22 potential deer yards in the town, ranging in size 11 to 267 acres in size. Evidence of recently used deer yard areas was found during fieldwork for this project and it is a goal of the Lyme CC to further document existing deer yards. Deer yards cover only about 3% of the land base in New Hampshire so their identification and management is an important part of conserving the entire State's natural resources.

This grove of eastern hemlock was crisscrossed with a network of wildlife trails.
This tree in the stand has been used by pileated woodpeckers foraging for insects.

Black bear 'marking bites' on a red pine

Porcupine feeding marks on this yellow birch

(Photos provided by the Lyme Conservation Commission)

Lyme has several species of trees that are considered important because of their mast production. These include red oak, bitternut hickory (*Carya cordiformis*), beech, maple, hemlock, cherry, juneberries (*Amelanchier* spp), and pine. Mast are the fruits produced by woody stemmed plants and can be either hard (seeds and nuts) or soft (fruits and berries). Wildlife species from nuthatches (*Sitta spp.*), chickadees (*Parus spp.*), squirrels, and eastern chipmunks (*Tamias striatus*) to white-tailed deer, black bears, turkeys (*Meleagris gallopavo*), and wood ducks (*Aix sponsa*) rely heavily on mast as a source of feed. Hard mast produced by oaks, hickory, beech, and some shrubs such as beaked hazelnut (*Corylus cornuta*), is considered extremely important because it is able to persist for a longer amount of time than soft mast and therefore is accessible to wildlife during times of the year when other food sources are limited. Several areas of oak, hickory, and beech stands have been located and mapped throughout town, most of which are found in the middle and western portion of Lyme. During field inventory several butternut trees (*Juglans cinerea*) were observed scattered throughout Town. Unfortunately, most were dead or dying. The Butternut is seriously threatened by an introduced canker disease, caused by the fungus *Sirococcus clavigigenti-juglandacearum*.

Within the forestland there are special habitat compositions that offer various advantages to specific species. In Lyme, studies focused on black bear and whitetail deer have located and mapped well used trails, den sites, feeding sites, and even bear wallows. Another component identified within the forest is potential deer wintering areas and deeryards. Further observed areas are unique bobcat and coyote den sites. These studies have been conducted over several years by Lyme residents who are specialists in their fields.