Climate Adaption – Forest Management

UNH Cooperative Extension is advising communities of the need to adapt to a changing climate. Southern New Hampshire is already experiencing rising temperatures. Temperatures have been consistently rising since 1970 and will continue to rise regardless of whether the future follows a lower or higher emissions scenario.

Based on current understanding of how forests work, actions can be taken to reduce forest vulnerability and increase resiliency so forests can continue to provide benefits we depend on.

UNH Cooperative Extension is recommending incorporating plans for climate adaption into our municipal documents.

The Forestry Committee maintains forest management plans for our town forests. Most plans are already in place and others pending. Rather than change each individual plan, we are completing an assessment for all of our forests.

The following assessment comes from "Increasing Forest Resiliency for an Uncertain Future" by Paul Catanzaro - University of Massachusetts Amherst, Anthony D'Amato - University of Vermont and Emily Silver Huff - USDA Forest Service.

1. ASSESS FOREST RESILIENCY - Assess the resiliency of the forest and evaluate the vulnerabilities to current and future stressors.

1.1: Conservation-based estate planning has been implemented to ensure the continuation of this land as forest into the future. *Resilient – all town forests are in public protection pursuant to RSA 31:110-113.*

1.2: The property is part of a resilient forest or serves as a connection between large areas of forest (>250 acres in southern New England, >500 acres in northern New England). *Partially resilient – some of Pelham's town forests are smaller than 250 acres and are not contiguous to other protected land. Nevertheless, the town seeks opportunities to add to existing protected land through conservation subdivision design, direct acquisition and donations, and through partnerships with abutting landowners.*

2. REDUCE STRESSORS -Pressures on a forest can reduce its resiliency and impair its ability to function properly.

2.1: Invasive plants are NOT found on or near the property. *Stressor Partially Reduced– Invasive plants are found on most of Pelham's town forests. However, the*

Forestry Committee has implemented a program to treat invasive plants on a yearly rotating basis based on invasive plants identified during forest management planning and/or monitoring.

2.2: Invasive insects and tree diseases are NOT found on or near the property. *Stressor Reduced - Generally, Pelham's town forests are free of invasive insects and tree diseases at this time. Periodically, the forests are checked for these threats during forest management planning and/or monitoring. If found, appropriate action would be taken to mitigate the threat to the extent possible. The Forestry Committee recognizes that the best protection against invasive insects and tree diseases is to encourage and maintain both species and age class diversity to the greatest extent possible.*

2.3: There are NO signs of significant deer impacts or an increasing deer population. *Stressor Partially Reduced - Some of Pelham's town forests are showing evidence of significant deer browse. Some town forests allow hunting which can assist in reducing deer populations. In addition, wherever possible and if deemed to be potentially effective, timber harvesting debris (slash) will be left in place to discourage deer browse.*

2.4: The soils are NOT compacted or exhibiting evidence of significant erosion. *Stressor Partially Reduced – Some soils on trails are compacted due to use. The Forestry Committee deals with soil erosion and compaction by undertaking regular trail maintenance and attending to proper trail drainage. Trail repair is an ongoing yearly maintenance activity. Motorized vehicles which can contribute to soil compaction and erosion, are not allowed on Pelham's town forests. Forest management is conducted in accordance with New Hampshire's "Best Management Practices for Erosion Control on Timber Harvesting Operations" under the supervision of a licensed professional forester in order to minimize soil disturbance.*

3. REDUCE VULNERABILITY - The capacity of a forest to respond to a disturbance by resisting damage or stress and recovering quickly.

3.1: The forest has a diverse amount of species of various sizes, ages, and spatial arrangements. *Vulnerability Reduced – All of Pelham's town forests are under a management plan that focuses on regeneration as the key to developing a diverse*

amount of species of various sizes, ages and spatial arrangements in order to produce a sustainable forest and increase resiliency.

3.2: The forest is largely dominated by species predicted to be well adapted to future conditions. *Vulnerability Reduced – Pelham's town forests are largely dominated by oak-pine forests. Under warming temperatures, central hardwood species are predicted to remain stable under various climate change scenarios.*

3.3: The forest contains a low abundance of preferred host species for invasive insects or diseases threatening the area (e.g., white ash: host of the emerald ash borer; eastern hemlock: host of the hemlock woolly. *Vulnerability Reduced – White Ash, Eastern Hemlock, Red and Sugar Maples are not dominant species in any of Pelham's town forests. Scheduled forest management on these properties focuses on removing these high risk host tree species when applicable.*

3.4: There are NO areas of the forest with dense, crowded tree stems. *Vulnerability Reduced - Through forest management, crowded, dense tree stems are generally reduced through a variety of silvicultural treatments and intensities. Forest management results in decreased tree competition for sun, water, and growing space. Increased vigor and desirable species of the trees that remain help meet overall goals for the land.*

3.5: There are 5 or more large snags (>16" diameter) per acre. *Vulnerability Partially Reduced – As a rule, all snags and dying trees are retained except when safety is an issue. Evaluation is done on a stand by stand basis during forest management planning and/or monitoring. Future forest management can focus on improving the quantity of snags and dying trees when applicable.*

3.6: There are 5 or more large logs (>16" diameter) per acre. *Vulnerability Partially Reduced – As a rule, large deadwood logs are noted but not inventoried during forest management planning. Future forest management can focus on retaining large deadwood logs as applicable.*

3.7: Water resources have forested buffers. *Vulnerability Reduced – Pelham's town forests have many types of water resources – wetlands, ponds, streams, beaver ponds etc. The town maintains a wetland conservation district of 50 feet from the boundary of the water resource and a 100 foot buffer from the boundary of a prime wetland. All forestry activities within the wetland conservation district buffer*

conform with "Best Management Practices for Erosion Control on Timber Harvesting Operations".

4. Provide Refuge - *Maintain the maximum level of plant and animal diversity over time.*

4.1: The property is habitat for threatened, endangered, or at-risk species. *Provides Refuge - Wherever possible the Forestry Committee manages town forests to accommodate threatened, endangered or at-risk species. All forest management plans contain a letter from NH Natural Heritage Bureau to determine potential species that need protection. During forest management planning and/or monitoring the Forestry Committee coordinates with natural resource professionals as necessary. The Gumpus Pond Conservation Area contains a 15 acre early successional habitat for the New England Cottontail and other species that rely on this type of habitat.*

4.2: The property can harbor species that we may lose from the landscape. *Provides Partial Refuge – To the extent possible, the Forestry Committee manages town forests using adaptive management and ecological forestry principals which may provide the ability to harbor species that could be lost.*

Summary

All of Pelham's town forests are evaluated and protected using the standards of the New Hampshire Tree Farm System. These standards focus on protecting water resources, improving wildlife habitat, promoting healthy forests and encouraging passive recreation.

In addition, we are committed to practicing Adaptive Forest Management & Ecological Forestry which seeks to:

- *Maintain soil structure and productivity minimizing erosion, disturbance and compaction.*
- *Maintain naturally occurring species composition of all native plants and animals.*
- *Harvest only from abundance and retain and protect rarities.*
- *Emulate natural disturbance regimes.*
- *Utilize silviculture to stimulate the development of species and structures that will naturally evolve over time.*

- *Incorporate perpetual, variable retention of Legacy Trees.*
- *Practice multi-aged management to the degree the site permits.*
- *Eliminate and prevent the spread of exotic invasive plants.*
- *Maintain a functioning forest first and foremost.*
  Identify, protect and where appropriate manage sensitive, fragile, unusual or rare plants, animals or communities.