

# Huntington Wildlife Forest

## Natural Resources Management Plan

### Goals and Objectives

State University of New York  
College of Environmental Science and Forestry  
Newcomb, NY

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## **Statement of Intent**

This document articulates the goals and objectives for management of natural resources on the Huntington Wildlife Forest (HWF). These goals and objectives are intended to provide direction to the manipulation of all natural resources, including timber, wildlife, water and space. The overarching intent is to ensure the sustainability of ongoing research and future research opportunities. Further, the plan will sustain education and outreach to the greatest extent possible through their integration with research programs.

## **Introduction**

The intent of the State University of New York, College of Environmental Science and Forestry (ESF), through its Adirondack Ecological Center (AEC), is to gain a comprehensive understanding of the components and natural processes that shape the Adirondack ecosystem and to recognize the human influence on these processes. Consequently, the primary mission of the AEC is research and, as a field station of an institution of higher learning, our approach to this research is student-oriented. To achieve this we must attract scientists and students from our university, other academic institutions, government and non-government organizations and the private sector, to conduct work on all aspects of the Adirondack ecosystem. To attract good scientists and students, we must maximize their ability to do research. We do this by providing support facilities, staff, specialized equipment, historical data and protected sites for experimentation. We also actively manage our natural resources to ensure a diversity of ecological conditions in anticipation of future environmental issues and research needs. We recognize that instruction is an important complement to our mission. Our management must seek to provide students with opportunities to learn from direct exposure to both natural and managed ecosystems. Thus while the primary mission is research, all management activities should be conducted with consideration of the benefits to educational goals as well.

The foundation for much of this research is the Huntington Wildlife Forest (HWF), a 15,000-acre tract of land deeded to the College for the specific purpose of promoting wildlife research. For scientists and students, HWF is an important asset because of the opportunities for long-term experimentation it affords, and because these opportunities are complemented by the rich array of ecological conditions on the Forest, the lands immediately surrounding the property and throughout the Adirondack region.

Sustaining the development of research and education programs requires a sense of the carrying capacity or a process by which to gain that sense, so we can optimize use of the resources. We lack a clear measure of that capacity so managing the resources of HWF requires especially careful attention. Certification programs based on sustainable forestry criteria provide a useful example of one process for developing management plans. While indicators for those sustainable forestry certification programs were developed for commercial forest operations, many can be adapted to

research forests. Our plan for HWF addresses four components of certification programs: (1) there is a written plan, (2) management objectives of the plan are mission-driven, (3) management activities employ the best management practices and, (4) a documented monitoring program ensures that all management actions address the mission and goals, and follow best management practices.

Finally, an important caveat must be acknowledged. Both forest environments and research opportunities are dynamic. Ecological conditions of a forest will not remain static. Consequently, active and continual manipulation is essential to maintaining some types of ecological conditions. Nor can managers foresee the kinds of conditions that will be considered desirable to support research and education interests in decades to come. The challenge on a research station is to anticipate issues that are likely to be important and to apply management actions that shape the natural resources to enhance the ability of scientists to address those issues. Given that it may take decades to establish the desired conditions, management plans must carefully consider the arrangement of ecological conditions in both space and time. The plans must be continuously reviewed and adjusted with caution as needs and opportunities arise.

Forest ecosystems, including those at the Huntington Wildlife Forest, provide a wide range of important ecosystem services. In addition to providing forest products these services include protecting water quality and quantity, affecting trace gas fluxes that contribute to global warming, providing habitats for the maintenance of biodiversity and maintaining aesthetic quality. In the quantification of these ecosystem services at the Huntington Forest, various research and outreach activities need to be integrated not only into evaluations for the entire Adirondack Region, but also the entire temperate forest region of the Earth. Recent studies relating to these ecosystem processes have been utilized in regional and global analyses on the effects of air pollutants, including acid rain, and climate change and how these are altering ecosystem services.

## **Purpose of This Plan**

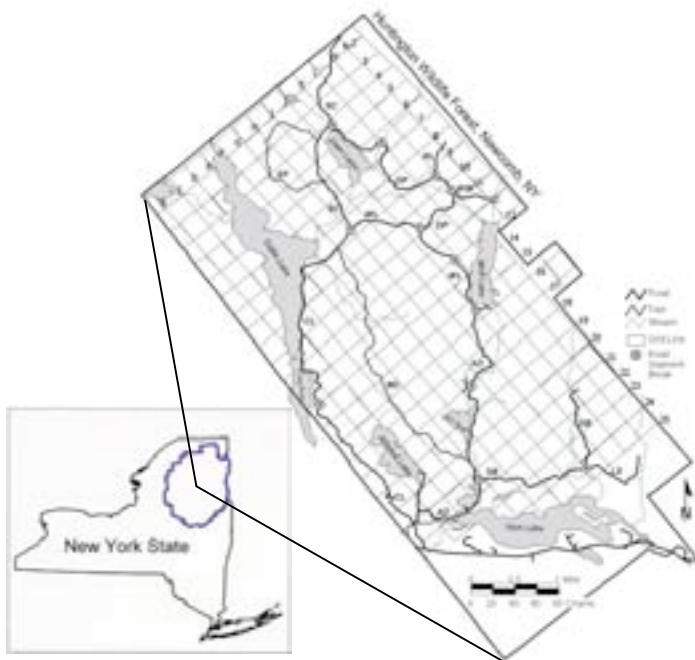
This plan establishes goals and objectives for vegetation management on HWF, including timber harvests associated with tending and regeneration prescriptions. Therefore, it is attentive to a majority of indicators and criteria of sustainable forestry. It recognizes that there will be instances where research needs will require establishment of forest conditions that are not aligned with sustainable forestry ideals. The plan also recognizes that monitoring for research will exceed that required by most certification programs because ecological research demands investment in a broad spectrum of information gathered on temporal scales of decades and centuries.

This plan lays the foundation for a process rather than serving as a blueprint for management. It recognizes the dynamic nature of HWF, and the surrounding Adirondack forests. It highlights the HWF commitment to long-term research and to the management actions needed to create specific conditions that will serve research and education needs decades into the future. It attempts to work in concert with natural

ecological processes rather in opposition to them. It catalogs many of the long-term monitoring projects that will enhance future understanding of ecological processes.

The plan is therefore a dynamic document subject to periodic reviews and adjustments. And because natural resource management to achieve desired results is a long-term process, the plan recognizes that current vegetation manipulations set into motion ecological processes that take decades to produce the desired outcomes. In choosing among the options, judgment based on past experience and intuition is necessary and plans must be flexible to changing needs and opportunities that emerge in the future.

## Overview of Huntington Wildlife Forest

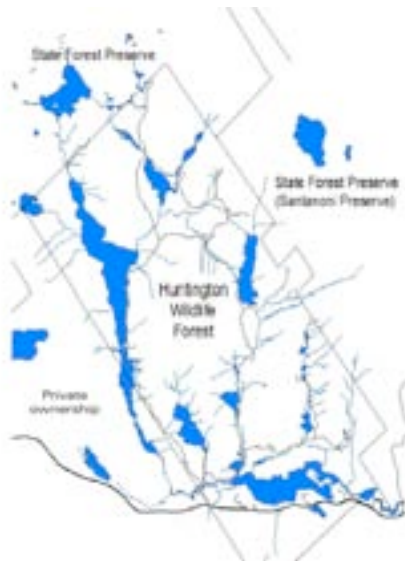


**Figure 1. Huntington Wildlife Forest**

white cedar (*Thuja occidentalis*), and white pine (*Pinus strobus*). A few small conifer plantations contain Norway spruce (*Picea abies*), red pine (*Pinus resinosa*) or white pine. These cover less than 100 acres. The topography is mountainous and elevations range from 1500 to 2700 ft. The mean annual precipitation is 41 inches and snowfall is 116 inches. Mean monthly temperatures range from 15 °F in January to 65 °F in July (HWF, unpublished data). The growing season is 120 days on average. Upland watershed soils are generally < 3.2 ft. in depth and include Becket-Mundell series sandy loams (coarse-loamy, mixed, frigid typic Haplorthods) while Greenwood Mucky peats are found in valley bottom wetlands. Five major water bodies ranging in size from 94 to 531 acres occur on the property as well as two small man-made ponds. The Forest has

The 15,000 acre Huntington Wildlife Forest is located in the towns of Newcomb and Long Lake (Essex and Hamilton Counties) New York, and near the geographic center of the Adirondack Park (Figure 1). The regional vegetation is transitional between northern hardwood forest to the south and the boreal forest to the north. HWF contains both undisturbed natural communities and managed forest stands. Forest types consist of northern hardwoods (72%), mixed hardwood-conifer (18%), and conifer (10%). Dominant northern hardwood species include American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), and yellow birch (*Betula alleghaniensis*). Witch hobble (*Viburnum alnifolium*) and American beech are prominent in the understory. Common conifers are red spruce (*Picea rubens*), balsam fir (*Abies balsamea*), hemlock (*Tsuga canadensis*),

numerous beaver ponds and wetlands as well as over 25 miles of 1<sup>st</sup> and 2<sup>nd</sup> order streams.



Although public access is restricted into the interior and research portion of the property, the College permits public access at 3 other locations; a 2-mile trail to the summit of Goodnow Mountain, access to Rich Lake for non-motorized watercraft, and the 235 acre lease that houses the Adirondack Park Agency’s Visitor Interpretive Center and its 4 miles of trails. All of these public access points are easily accessible from State Highway Route 28N. This highway transects the southern portion of HWF, with Goodnow Mountain to the south and the majority (13,500 acres) of HWF to the north. HWF is bounded on its north and east sides by State Forest Preserve lands and on the south and west by a large private forest landowner (Figure 2).

Figure 2. HWF and adjacent land owners

The facilities on HWF include a network of well-maintained gravel roads totaling approximately 23 miles. Administrative and housing facilities are clustered in three locations that are accessible from State Highway Route 28N: the AEC, the Rich Lake Area, and the Arbutus Area (Figure 3). The area adjacent to AEC includes a laboratory building, animal holding area, atmospheric monitoring site and two year- round residences. The Rich Lake Area has four bunkhouse style cabins, the Rich Lake Dining Center and the two-story residential building known as the Director’s Residence. The largest cluster of buildings, the Arbutus Area, includes the historic Huntington and Arbutus Lodges, [four] cabins for long- and short-term housing, a year-around residence and the facilities maintenance shop. A few small outbuildings and historic cabins are scattered on the forest and used primarily to shelter equipment.

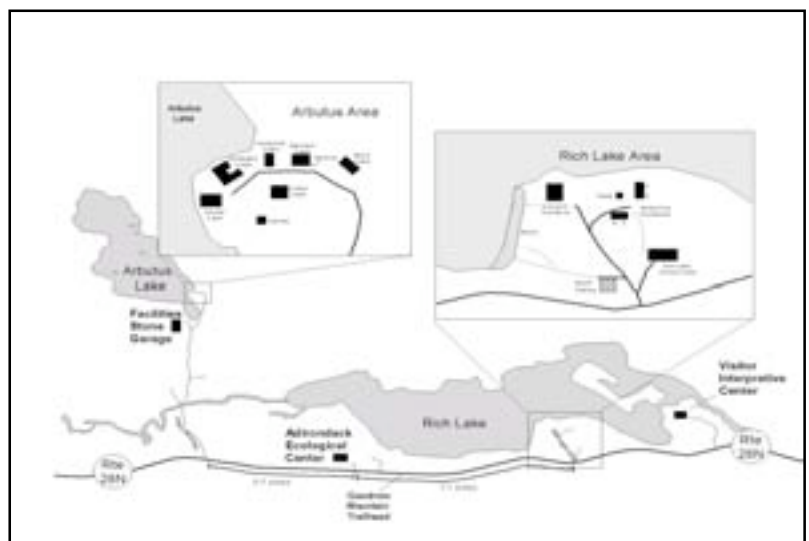


Figure 3. HWF Facilities

For scientists and students, HWF is a particularly important asset because of the opportunities for experimentation on long time intervals, large geographic scales and/or

protection of experimental plots from unwanted human disturbance. The value of HWF is increased by its location in the geographic center of the Adirondack Park, where it is distant from most anthropogenic influences. The value is also enhanced by the rich array of ecological conditions on lands immediately surrounding the property and combinations of land uses nearby. Within a 25-mile drive and within easy access for researchers and educators, nearly all of the major plant community types of the northern forest exist as well as most of the land-use categories classified by the Adirondack Park Agency. These assets of HWF are valuable to the College specifically because they occur within one of the world's foremost experiments in sustainable management of a northern temperate forest, the Adirondack Park.

## **Huntington Wildlife Forest History**

Archer and Anna Huntington conveyed the property to the College in the 1930's. Archer Huntington (1870-1955) was the son of Collis Huntington, a founder of the Southern Pacific railway. Archer inherited a fortune as the only heir to Collis. In 1923, Archer married Anna Hyatt (1876-1973). Anna was a world-renown sculptor of whose works grace the main campus of SUNY-ESF, New York City, and Brookgreen Garden in South Carolina. Huntington and Arbutus Lodges, served as the Huntington's summer retreat where Archer came to fish and Anna prepared field studies for her acclaimed sculptures. William West Durant built Arbutus Lodge in 1898 and it is one of only eleven structures remaining in the Adirondacks that characterize Durant's original vision of the Adirondack Great Camps. The original Huntington Lodge was built circa 1910 by Huntington and was probably based on Durant designs. Archer and Anna Hyatt Huntington donated the 15,000 acres and all buildings to the College in two separate gifts; one in 1932 and one in 1939. Both Archer and Anna were passionate about animals, particularly wildlife, and donated the property with specific intent that it be a research station to:

*“be used for investigation, experiment and research in relation to the habits, life histories, methods of propagation and management of fish, birds, game food and furbearing animals and as a forest of wild life....”*

In 1932, the College established biological surveys on the property and began a tradition of research that continues to this day. The early natural history studies have been expanded into a sophisticated system for monitoring ecological parameters on a long-term basis. This monitoring system, which encompasses more than 100 biological, chemical, and physical attributes, forms a foundation for many contemporary research programs.

The AEC was established in 1972 on the Huntington Wildlife Forest as a way of formalizing the research and instructional programs and promoting an understanding of the Adirondack ecosystem through research. As SUNY's foremost field station in the

northern forest, the AEC supports the broader mission of the University by providing opportunities for students to gain direct experience with scientific research and natural systems. The AEC immerses students and visitors in this natural world, providing a life-changing experience within a complex forest ecosystem.

## **Administrative Structure**

Three different College units administer the various resources and programmatic elements of HWF. The AEC coordinates all research, education and demonstration activities on HWF, and helps to facilitate other programs and research throughout the Adirondack region. The Director of AEC reports to the Vice President for Academic Programs. Responsibility for all forest management activities, including all timber harvest is vested with the Director of Forest Properties and reporting lines are to the Vice President for Administration. Maintenance of roads and facilities is supervised by the College's Physical Plant, which also reports to the Vice President for Administration. The administrative framework for each of these entities is shown in Figure 4. Good communication among these three units is imperative to the proper management and use of HWF, and is an essential element for bringing the HWF objectives and goals to fruition in the years ahead.

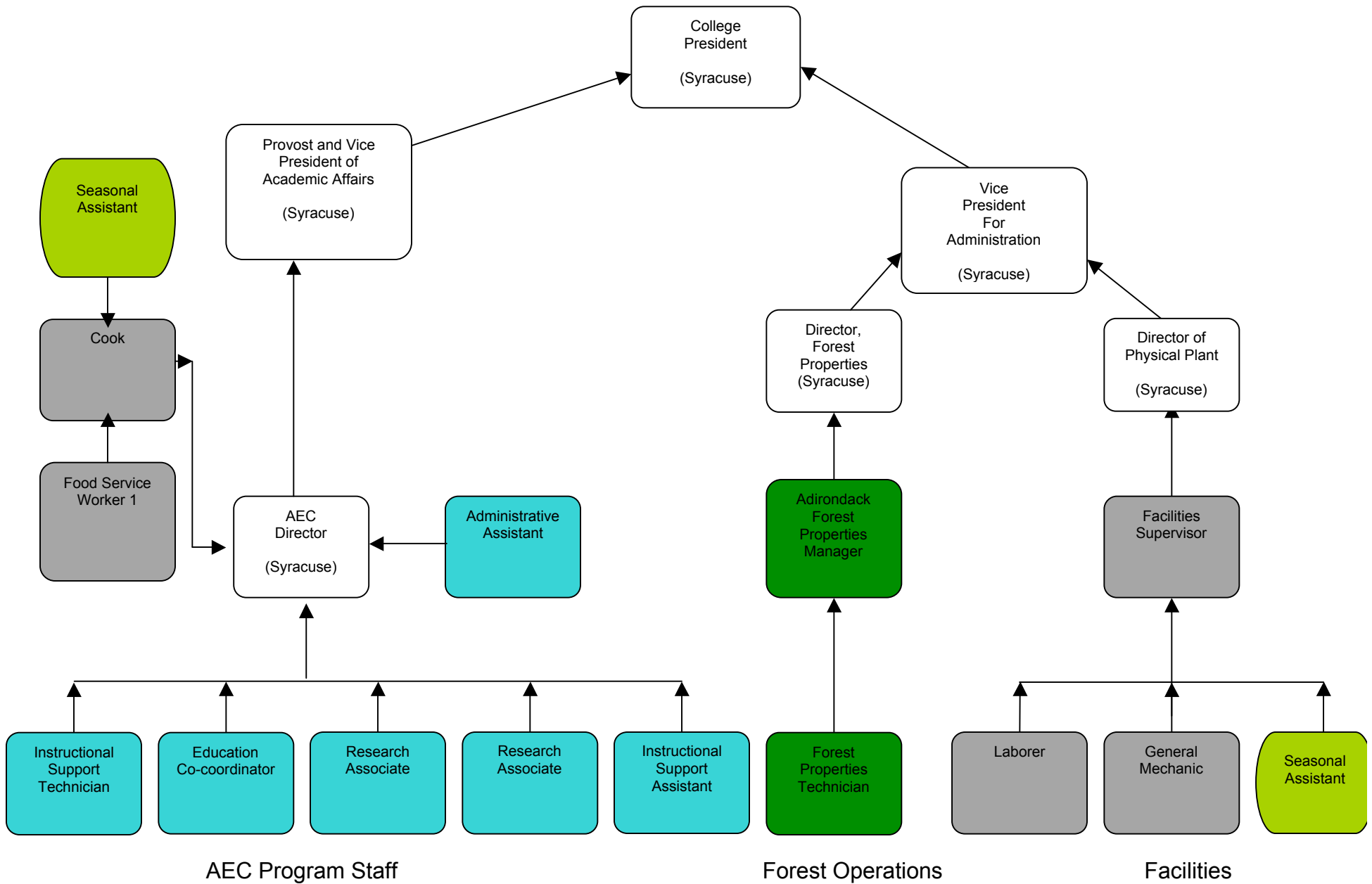


Figure 4. Administrative Structure of HWF

## Management Goals

### *Foundations of Management*

The mission of the Huntington Wildlife Forest is to promote research, education and outreach to include all aspects of the natural environment. This mission drives management decisions by ensuring that all natural resource management activities sustain the physical and biological integrity of the natural resources, preserve unique ecological communities and provide a diversity of forest conditions for educational and research opportunities. Management and research activities are evaluated on their ability to position the College to more effectively engage scientific issues and compete for high quality research projects. More specifically, all management, including forest manipulations, must be in accord with the following mission goals:

- 1) Provide a diversity of forest conditions representative of the broader Adirondack forest on HWF in appropriately sized units to facilitate research needs. Specific guidelines include establishing and maintaining:
  - a. a diversity of age classes, species composition, stem densities, and vertical structure.
  - b. a diversity of sizes of managed units as dictated by research or demonstration needs including some large (50-200 acres) and small (<50 acres) sized forest manipulations.
- 2) Maintain ecological integrity. Specific guidelines include identifying and ensuring the ecological integrity of:
  - a. all populations of threatened or endangered plants and animals.
  - b. unique plant and animal communities.
  - c. all lake, stream and wetland areas.
- 3) Maintain the integrity of active research sites or areas. Specific guidelines include ensuring:
  - a. priority of dedicated research activities over all other uses.
  - b. documentation of spatial databases and metadata for all manipulations and long-term research sites.
  - c. adherence to plot-marking protocols.
  - d. periodic review of the need for continuing commitment of specific areas to particular research activities.
- 4) Identify and, where feasible, halt the invasion of invasive species.
- 5) Promote and encourage accessibility to locations valuable to teaching, research and demonstration.

6) Identify and protect cultural resources.

These management goals are dynamic and the management zones defined later in this document are subject to change. The future managers of HWF may have different goals and modify this plan to fit the immediate and long-term needs, as they perceive them. The dynamic nature of the forest, especially catastrophic natural disturbances, will dictate many of the management decisions. Specific management actions will be influenced further by economic feasibility. It must be understood that although management actions cannot proceed at a financial loss, financial gain cannot be the factor driving management decisions.

*Anticipated Research and Educational Opportunities*

Foresight concerning future research opportunities is challenged by the long time scales at which forest ecosystems change, and the short time scales of change in technology, economics, global resource requirements and public values. As we anticipate future research opportunities, we must work to find opportunities to bring those time scales into alignment. It should also be understood that, with a few exceptions, it is silvicultural systems combined with natural regeneration and processes that are of the most interest for research and educational opportunities. This will guide the types of environments that will be created and maintained on the Forest. The topics listed below are those likely to encompass major environmental issues in the future and should therefore be recognized in formulation of management action.

- a. Animal ecology of both vertebrates and invertebrates including species restoration
- b. Plant ecology, entomology, forest health and pathology, especially of second-growth and old-growth forests
- c. Biotechnology, especially as related to management of pathogens
- d. Interaction of plant and animal population dynamics as related to shaping the future of forest ecosystems
- e. Silviculture, especially as related to approaches that are innovative or provide guidance to government regulation
- f. Landscape ecology, especially related to variation in temporal and geographic scales of ecological processes
- g. Sustainability of natural systems, especially those related to uses of renewable forest resources, movements of toxins and pollutants, invasion by exotic species
- h. Systems ecology, especially as related to biodiversity and biotic integrity, global climate change, energy cycling and nutrient dynamics, and plant community, wildlife and human health

*Best Management Practices*

HWF strives to take the lead in protecting water quality, providing a productive forest, improving public opinion of forest management and supporting practices that are

important to sustainable forestry. For this purpose, appropriate silviculture and best management practices (BMPs) must be employed on HWF (Appendix A). The guiding philosophy of BMPs is to protect water quality and the forest and soil resources. The practices covered by BMPs include proper harvest planning, positioning and installation of skid trails, log landings, stream crossings, and forest road construction and maintenance. Appropriate silviculture must also be used to insure predictable outcomes and sustain the values of interest. As an educational institution, HWF recognizes that the philosophies of sustainable forestry and routine use of BMPs have important educational values and encourage landowners of all types to examine their forest management actions to insure appropriate economic and ecological outcomes.

## **Monitoring Procedures**

Monitoring is an essential element of all management activities on HWF and monitoring programs should enhance the following goals:

1. Ensure that all manipulations are in accord with the research mission of the property, and serve educational needs as well.
2. Ensure that all manipulations of the Forest and construction of physical infrastructure use appropriate methods and adhere to BMP guidelines.
3. Ensure that ongoing or historic research and management plots are documented and that data archives contain necessary metadata.
4. Ensure that invasion by undesirable exotic species is minimized.
5. Ensure that measures of ecological change are undertaken with reasonable breadth and resolution.

While the first four objectives are in keeping with sustainable forestry criteria, monitoring of ongoing ecological change transcends most commercial forestry programs. For a research station, however, the fifth objective is crucial because it ensures that HWF will be a source of long-term, broad-spectrum data on ecological and environmental change. Much of the monitoring protocol is in place, but adjustments will seem prudent as new methodologies become available in the future. Some of the data collected through monitoring and research projects since the 1950's were incorporated in 1983 into the Adirondack Long-Term Ecological Monitoring Program (ALTEMP). ALTEMP provides an institutional framework for monitoring over 100 physical, chemical and biological variables on the HWF. This program is similar in scope and purpose to the Long-Term Ecological Research (LTER) sites. LTER, established by the National Science Foundation, is a collaborative effort of students and scientists interested in investigating ecological process over the long temporal and broad spatial scales using well-designed and documented methodology.

Specific guidelines for monitoring include the following:

- a. Continuous Forest Inventory (CFI) on 10-year measurement cycle (Appendix B)
- b. Terrestrial Vertebrate Inventory (TVI) on an annual basis (Appendix C)
- c. Aquatic Vertebrate Inventory (AVI) on an annual basis (Appendix C)

In addition, when manipulations are planned, monitoring protocols are developed specifically to capture ecological conditions pre- and post-treatment and changes that occur through time afterward. The variables measured are tailored to each manipulation.

Data archive procedures for all research projects on HWF have been established (Appendix D) as well as archival requirements for all GPS data. A geographic information system (GIS) was installed in the early 1990's to enable complex spatial analysis and aid in planning research. In 2000, the AEC joined the Northeastern Ecosystem Research Cooperative (NERC), an initiative promoting cooperation among scientists in the U.S. and Canada. Our goal is a web-based interface to allow researchers to download ALTEMP and other monitoring data sets to facilitate their own research needs.

## **Management Recommendations**

### *Management Zones*

Forest management activities on HWF should create or maintain a range of forest conditions that allow faculty, students and others to take advantage of a variety of research and education opportunities. To facilitate management, the forest is divided into five zones: administration, demonstration, long-term monitoring, special management, and research (Figure 5).

#### ***Administration Zones***

All areas associated with housing, office, dining, facilities management, and laboratory space are considered to be in Administrative Zones. Also included in these zones are two of the three public access points: Goodnow Mountain and Rich Lake Boating Access. Safety of visiting students, researchers and resident staff is of key importance.

#### ***Guidelines for Management –***

- Provide safe working, recreation and living environment for students, researchers and visitors to HWF. Policies and guidelines to help ensure appropriate and safe use of HWF have been established (Appendix E).
- Maintain land, buildings, fixtures and improvements in good repair and in a way that is aesthetically pleasing.
- Maintain 200-foot conservative harvest and vegetation manipulation buffer around Rich Lake (exception – 30-foot buffer in white pine plantation between Rte 28N and Rich Lake).

### **Demonstration Zones**

The purpose of the Demonstration Zones is to provide sites where naturally occurring or managed stand conditions can be developed and/or maintained for educational purposes. Recognizing that instruction is one of the major components to our mission, approximately 4500 acres in the southern portion of HWF have been designated as Demonstration Zones. These areas are laid out in close enough proximity so that examples of forest stand development, silvicultural practices and different forest cover types will be accessible with the least amount of road travel. Some sites within the Demonstration Zones are accessible during the winter months, broadening opportunities for programs related to teaching and instructional activities. Having stands designated as part of the Demonstration Zones also protects current research sites from unexpected intrusion that might have unintentional negative impacts. Research can and will occur in these Demonstration Zones, but demonstration is the priority use for this area.



**Figure 5. HWF Forest Zones**

### **Guidelines for Management –**

- Achieve/establish demonstration plots for the shelterwood regeneration method. Ideally, approximately 5- to 10-acre cuts will be done to establish five areas that demonstrate stand development over time.

- Achieve/establish demonstration plots for examples of a variety of residual basal area from various thinning regimes.
- Achieve/establish demonstration plots (approximately 25 acres) for uneven-aged silviculture, including examples of single tree selection, patch-selection, or group selection methods.
- Achieve/establish demonstration plots for conifer plantation management.
- Retain the old-growth site on the Catlin Lake road for demonstration purposes.

### ***Long-term Monitoring Zones***

These are areas where long-term research is conducted, providing the temporal perspective necessary to understanding ecosystem dynamics.

**Hare Area** – 143 acres -This area serves as the site of numerous historic and active research projects. Two ALTEMP projects; songbird and small mammal population monitoring, occur in this unit.

#### *Guidelines for Management -*

- Continue to allow natural processes and natural vegetative succession to be the predominant influence on this stand. Preclude activities that artificially alter the density, kind, and development of existing vegetation.



**Bureau Brothers Turn** - 100 acres - In 2000, 100 acres of northern hardwood forest on HWF was placed under hybrid form of patch-selection management. This area represents four years of intensive study of the impacts on amphibian, songbird, and small mammal populations as well as the impact on other cavity nesting species. Twelve white-tailed deer exclosures are located within the 100 acres with the intent of evaluating the impact of herbivory on the successful regeneration of northern hardwoods using this type of regeneration method.

#### *Guidelines for Management –*

- Continue management of the area as an uneven-aged stand. This calls for a 120-year life span for each age class with subsequent entries at 20 year intervals to create new age classes by cutting 0.4 acre patches over one-sixth of the area during each entry.

**Cutting Methods** - 32 acres - This 32 acre study area was established in 1957 to test the role of light regime on regeneration of hardwoods. Plots (18 total) were set up leaving residual basal areas of 0, 30, 50 and 70 ft<sup>2</sup>/acre. Half of each plot was treated with an herbicide. The remains of small deer exclosures are also evident in this location. It serves as an important long-term demonstration area.

*Guidelines for Management –*

- Preserve this location as a long-term research and demonstration area

**Grouse Blocks** – 80 acres - This area is used as a demonstration site for ruffed grouse habitat management. The fire history of this site (1903 fires) has resulted in overmature aspen making it an ideal location to attempt to regenerate aspen using small block clearcuts. Thirty-two blocks, approximately 2.5 acres in size are being utilized to create aspen stands that are juxtaposed to create maximum diversity in age-class availability.



*Guidelines for Management –*

- Continue management of grouse blocks to promote ruffed grouse habitat.

**Maple Sale** - 160 acres - This area serves as the site of numerous historic and active research projects and is currently a principal stop for educational programs. Two ALTEMP projects: small mammal and amphibian population monitoring, occur in this unit.

*Guidelines for Management -*

- Continue management including pre-commercial thinning (e.g., crop tree release, etc.) of this developing even-aged stand and eventual crown thinning (at 65-70 years or age).

**Sucker Brook** – 614 acres - This area serves as the site of numerous historic and active research projects. One ALTEMP project: songbird monitoring, occurs

in this unit. This area serves as an important location for white-tailed deer trapping and a major portion of the region involved in a long-term study on white-tailed deer ecology and behavior.

*Guidelines for Management -*

- Continue management of even-aged stand through the first commercial thinning (approximately 65-70 years of age).

**Special Management Zones**

The purpose of Special Management Zones is to delineate locations on HWF that require unique management considerations. Some sites represent significant financial investment from organizations and individual researchers through the installation of equipment and years of data collection. Any management activity must be done with consideration, adequate guidance and input from researchers with substantial financial or long-term interest in these locations. Other areas have unique biological characteristics that make them valuable for current or future research. Current use will dictate the guiding management philosophy for these Special Management Zones. This classification should supersede, when other alternative sites are available, all other zone designations. For example, if old growth sites are available on the property for demonstration purposes, the Natural Area should not be used for this purpose; the forest stands in the Wolf Lake watershed should not be the first choice for a forest manipulation to promote a research objective.



**Natural Area** – 971 acres

The SUNY Board of Trustees designated this 971 acre area as a “natural area” in 1941. The purpose of this designation was “to provide an area on the Huntington Wildlife Forest for long-time studies of natural conditions untouched by forest operations.” Although it is recognized that this stand has been altered by effects

of the beech bark disease complex, this area represents one of the few remaining large old-growth hardwood and mixedwood forests on HWF. Three major forest types occur on this compartment: northern hardwood, hardwood/conifer, and conifer. This area serves as the site of numerous historic

and active research projects. Four ALTEMP projects: seed production, small mammal, songbird and amphibian monitoring, occur in this unit.

*Guidelines for Management -*

- Continue to allow natural processes and vegetative development to predominate on this stand.

**Atmospheric Monitoring Site** – 4 acres - This site was established in 1983 and serves as the location for long-term climatic and weather monitoring. It is necessary that this area receive minimal human intrusion (i.e., vehicular traffic) that might affect the monitoring equipment. This site is critical to the National Atmospheric Deposition Program research project established in 1978 and the Clean Air and Status Trend Network established in 2002.

*Guidelines for Management -*

- Maintain 4 acre opening via mowing and cutting of shrubs around monitoring equipment.
- Limit public access

**Arbutus Watershed** – 866 acres - The Archer Creek watershed basin is the backbone of the biogeochemical studies occurring on the Arbutus watershed. Historically, this watershed has been the focus of over 40 research projects. Arbutus Lake is part of the New York State Department of Environmental Conservation's (NYS DEC) *Adirondack Lake Assessment Program*. These research activities involve long-term as well as event-based studies and require minimal disturbance. In addition to the significance of this area to the ongoing biogeochemical and hydrological research, long-term silvicultural research plots and important ALTEMP research sites are located within this area. The old-growth northern hardwood stand on the west-central portion of the area is a critical educational site.

*Guidelines for Management -*

- Minimize the disturbance to the watershed

**Wolf Lake Watershed** – 1185 acres -The 1185 acres surrounding Wolf Lake make up this special management area. Wolf Lake is an oligotrophic body of water containing only native Adirondack fish species including a native strain of brook trout, possibly a strain endemic to Wolf Lake. The Lake has been designated a "heritage lake"- a body of water as pristine as possible given the anthropogenic influences in the Adirondack region. Research on this body of

water includes monitoring water quality and gathering sediment cores and fisheries data to assess the impact of past and present human activity around and on the lake.

*Guidelines for Management -*

- Minimize the disturbance to the watershed
- Place barrier dam in lake outlet to prevent introduction of non-native fish

**Visitor Interpretive Center** - 235 acres -The Adirondack Park Agency leases 235 acres of HWF for its Visitor Interpretive Center (VIC) and associated public trail system. This center was opened in 1990 and currently is hosts up to 26,000 visitors a year. The VIC represents an important educational component of instructional programs of the AEC program. Instructional activities derive from use of the trail system, the VIC's public interpretation programs, and the site for the Huntington Lecture Series.

*Guidelines for Management -*

- Minimize disturbance that would have a visual impact in view shed
- No vegetation manipulation within 200 feet of the VIC property boundary.

**Research Forest Zones**

The remainder of the HWF is placed in the Research Forest Zone category. Guidelines for managing these stands suggest opportunities for creating and maintaining conditions that represent a minimum of what the AEC foresees as needed for current and future research. These represent a minimum array of stand conditions that the forest landscape should provide. Other forest management activities can occur in these areas provided there are no conflicts with other management goals and/or research initiatives. However, it is strongly recommended that three years notice be required in advance of any timber harvesting to allow for interested parties to make suggestions for utilizing the opportunity to further their research interests.

*Guidelines for Management (in order of priority) -*

- Preserve all old-growth stands. These stands are defined by having trees with large diameters for their species, numerous dead and downed materials on the ground, and numerous standing cavities and/or trees with

defects. This includes northern hardwood, mixedwood, and coniferous forest stands.

- Provide 300 acres of northern-hardwood forest in large sawtimber size class (at least 24 inches dbh) as future old-growth reserve or as stands that exhibit old-growth characteristics.
- Provide 100 acres of aspen/birch forest type in stands having a range of age classes from seedling-sapling through 50 years of age.
- Work towards allocating 100 to 200 acres of northern-hardwood forest to even-aged management. Ideally, 25-50 contiguous acres will be maintained in 0-10, 10-25, 25-80 and 80+ age class.
- Maintain and increase the conifer component in the northern hardwood stands and initiate management activities that will increase the area supporting conifer community types

## **Wildlife Management**

Forest management activities have a multi-faceted effect on biotic communities and our activities should demonstrate a holistic approach to sustaining all aspects of the ecosystem. This demonstration ability may require the use of herbicides and tree cutting as well as the management of other wildlife components to achieve the desired result. Outbreaks of damaging insects such as tent caterpillars and wooly adelgid and other natural agents like fire and pathogens may require active control to minimize the effects that would threaten the integrity of research on HWF. The use of herbicides and pesticides will be evaluated for each case to insure that the long-term consequence of instigating or withholding control has been appropriately considered.

In order to achieve some of the management goals, it may be necessary to periodically regulate the white-tailed deer herd on HWF. The northern portion of HWF has been under white-tailed deer management since the 1960's the objective of which is to maintain the deer density at 13-14 deer/mile<sup>2</sup>. In order to continue to achieve this objective, controlled harvest of white-tailed deer occurred on the northern section of HWF between 1966 and 1970 and again between 1978 and 1984. It is the intent of this plan to continue to keep the deer density on the northern portion at 13-14 deer/mile<sup>2</sup> level by maintaining the option to have additional deer harvest programs. Options for deer density control on the southern portion of the property should remain open but weighed against research needs.

Threats to human and wildlife health are an important aspect of the safety of staff, visiting researchers and the Adirondack community. It is recognized that it may be crucial to remove or control wildlife, be it individuals or populations that pose a threat to the welfare of humans or the ecosystem. It is difficult to determine what new threats

loom on the horizon, but by actively monitoring wildlife populations and being aware of potential hazards, we will keep risks at a minimum and be able to evaluate situations as they arise.

In all cases, research and demonstration needs will be the primary factor in determining the type and magnitude of the response for all wildlife manipulations.

## **Future Planning**

This written plan reflects the mission goals of ESF and the AEC. It promotes the use of best management practices for all forest management, research and facility operations. And it seeks to ensure the continuance of a well designed and appropriately documented monitoring system.

As a key step in developing details of the HWF management plan, an inventory will be needed in each forest stand on the property. That data will include a listing of research, cultural, educational, and unique ecological features found within each stand. This information will be needed as a prelude for developing prescriptions to create and maintain appropriate vegetation conditions within the different management zones designated in the goals and objectives for HWF.

HWF must also determine the research and educational carrying capacity of HWF. The myriad of activities across HWF put demands on the Forest's resources and require thoughtful oversight to insure the integrity of essential ecological conditions and active programs for using the Forest. Between 2004 and 2006, 43 different research projects utilized the natural resources of HWF in addition to almost 7,500 people participating in the AEC's research and/or educational programs. Although the carry capacity is unclear at this time, ongoing efforts will need to find ways to measure and manage it effectively.

This plan, like the natural resources it seeks to manage, is dynamic. It should be revisited at 5-year intervals to reassess the appropriateness of the designated management objectives and zone designations. The proper management of HWF will require ongoing adaptive management decisions to assure that scientists, students and society all benefit from ESF's guardianship of this remarkable resource.

This plan was authored by Charlotte Demers (AEC – Instructional Support Technician) and Dr. William Porter (AEC Director) with considerable input from Bruce Breitmeyer (Adirondack Forest Properties Manager). Mapping work was facilitated by Mike Gooden and Steve Signell. Drs. Ralph Nyland, Christopher Nowak and Myron Mitchell, ESF Faculty, reviewed the plan and provided comment and invaluable assistance in its development.

Table 1. HWF 2007 commercial stand acreage showing principal forest type and principal size class.

Principal size class (dbh)	Principal Forest Type (in acres)								
	Hardwood	Hardwood-Conifer	Natural white pine	Spruce Flat	Spruce slope	other	Plantation Norway spruce	Red pine	White pine
Seedling (<1")	158	11							
Sapling (1-4.9")	475	30		15	64				
Pole (5-11.9")	1200	139	18	125	237	37	1	2	
Small Sawtimber (12-18")	2023	975	6	196		10	13	13	
Large Sawtimber (>18")	4602	1968	47	474		31			24
Total	8458	3123	71	810	301	78	14	15	24
Total Acres	<b>12,894</b>								

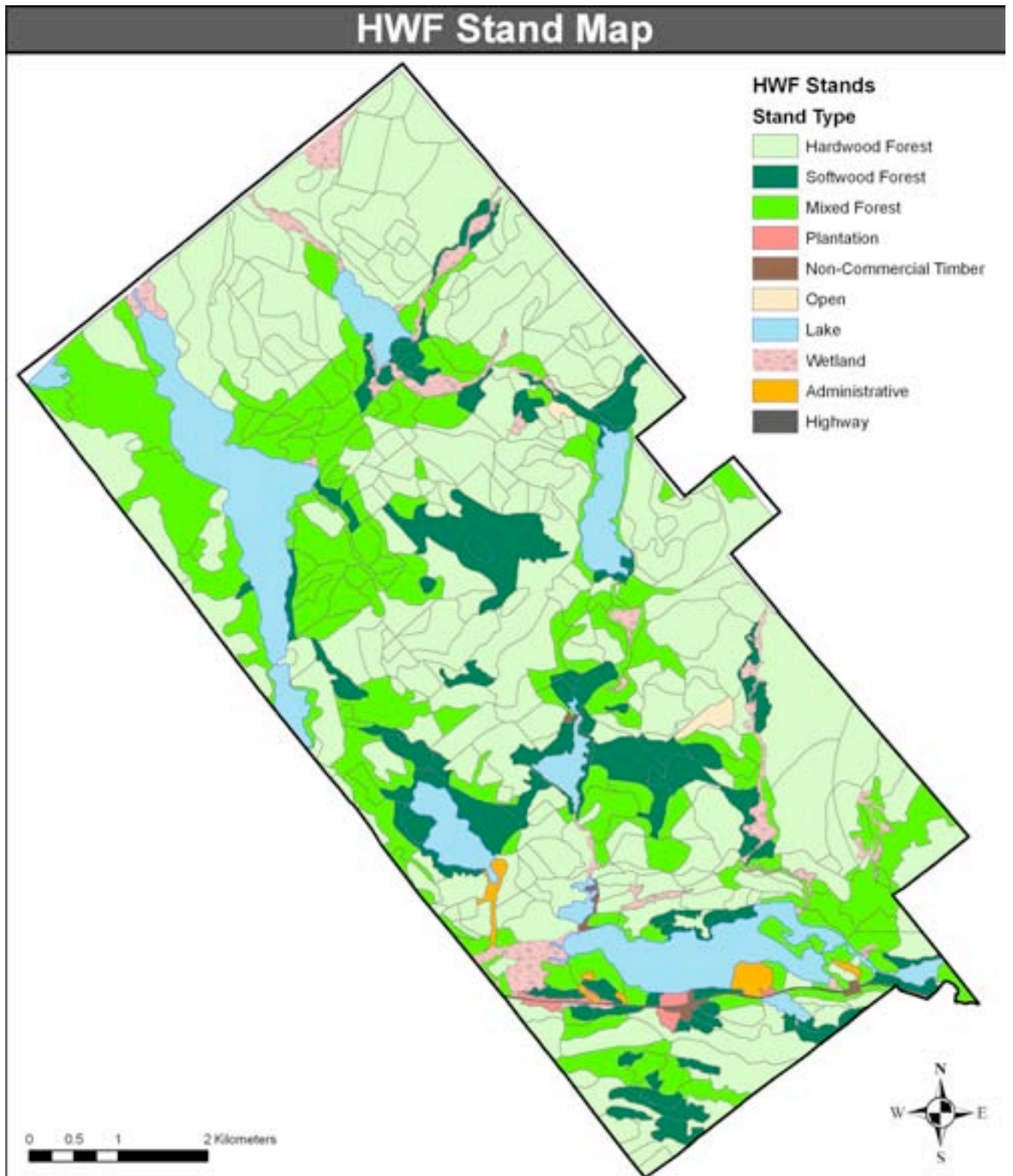


Figure 6. HWF Forest Types

## **List of Appendices**

- Appendix A. Best Management Practices Guidelines
- Appendix B. Continuous Foresty Inventory, Huntington Wildlife Forest
- Appendix C. Vertebrate Species List for Huntington Wildlife Forest
- Appendix D. Data Policy for the Adirondack Ecological Center
- Appendix E. Policies & Guidelines for the use of the Huntington Wildlife Forest
- Appendix F. Plant Species List for Huntington Wildlife Forest

These appendices are available at the AEC and available on-line at [www.esf.edu/aec](http://www.esf.edu/aec).