

# Beech-Maple Mesic Forest



Beech-maple mesic forest at Frenchman Island State Park



Photo credits: *Shane Gebauer*

<b>System</b>	Terrestrial
<b>Subsystem</b>	Forested Uplands

## Did you know?

American witch-hazel (*Hamamelis virginiana*) is a common shrub found in beech-maple mesic forests. It was used by native peoples for thousands of years and later by American settlers. Although witch hazel is not as popular as it was in the 1900s, it is still used to prevent infection from cuts, soothe insect bites and sunburn, relieve pain and swelling, reduce acne, tone skin, and as an aftershave.

## Summary

**Protection** Not listed in New York State, not listed federally.

**Rarity** G4, S4

A global rarity rank of G4 means: Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

A state rarity rank of S4 means: Apparently secure in New York State.

## Conservation Status in New York

There are several hundred to a few thousand occurrences statewide. Some documented occurrences have good viability and many are protected on public land or private conservation land. This community has statewide distribution and includes several very large, high quality, old-growth examples. The current trend of this community is probably declining due to moderate and imminent threats related to beech bark disease and development pressure.

## Short-term Trends

The number and acreage of beech-maple mesic forests in New York have probably declined moderately in recent decades as a result of logging, agriculture, and other development.

## Long-term Trends

The number and acreage of beech-maple mesic forests in New York have probably declined substantially from historical numbers likely correlated with past logging, agriculture, and other development.

# Conservation and Management

## Threats

Threats to forests in general include changes in land use (e.g., clearing for development), forest fragmentation (e.g., roads), and invasive species (e.g., insects, diseases, and plants). Other threats may include over-browsing by deer, fire suppression, and air pollution (e.g., ozone and acidic deposition). When occurring in expansive forests, the largest threat to the integrity of beech-maple mesic forests are activities that fragment the forest into smaller pieces. These activities, such as road building and other development, restrict the movement of species and seeds throughout the entire forest, an effect that often results in loss of those species that require larger blocks of habitat (e.g., black bear, bobcat, certain bird species). Additionally, fragmented forests provide decreased benefits to neighboring societies from services these societies often substantially depend on (e.g., clean water, mitigation of floods and droughts, pollination in agricultural fields, and pest control) (Daily et al. 1997). Beech-maple mesic forests are threatened by beech bark disease. Beech bark disease causes significant mortality and defect in American beech (*Fagus grandifolia*). The disease results when bark, attacked and altered by the beech scale (*Cryptococcus fagisuga*), is invaded and killed by fungi, primarily *Nectria coccinea* var. *faginata* and sometimes *N. galligena* (Houston and O'Brien 1983).

## Conservation Strategies and Management Practices

Management should focus on activities that help maintain regeneration of the species associated with this community. Develop a plan to eliminate or control beech bark disease. Deer have been shown to have negative effects on forest understories (Miller et al. 1992, Augustine & French 1998, Knight 2003) and management efforts should strive to ensure that regenerating trees and shrubs are not so heavily browsed that they cannot replace overstory trees. Avoid cutting old-growth examples and encourage selective logging in areas that are under active forestry.

## Development and Mitigation Considerations

Strive to minimize fragmentation of large forest blocks by focusing development on forest edges, minimizing the width of roads and road corridors extending into forests, and designing cluster developments that minimize the spatial extent of the development. Development projects with the least impact on large forests and all the plants and animals living within these forests are those built on brownfields or other previously developed land. These projects have the added benefit of matching sustainable development practices (for example, see: The President's Council on Sustainable Development 1999 final report, US Green Building Council's Leadership in Energy and Environmental Design certification process at <http://www.usgbc.org/>).

## Inventory Needs

Inventory any remaining large and/or old-growth examples across the state.

## Research Needs

Critically compare this community to maple-basswood rich mesic forest and confirm that occurrences of each are properly classified. Regularly assess the presence and degree of impact that beech bark disease has on this forest community.

## Rare Species

Big Shellbark Hickory (*Carya laciniosa*)  
Striped Coralroot (*Corallorhiza striata* var. *striata*)  
Northern Clustered Sedge (*Carex arcta*)  
James' Sedge (*Carex jamesii*)  
Woodland Bluegrass (*Poa sylvestris*)  
Timber Rattlesnake (*Crotalus horridus*)  
Northern Wild Comfrey (*Cynoglossum virginianum* var. *boreale*)  
Bald Eagle (*Haliaeetus leucocephalus*)  
New England Cottontail (*Sylvilagus transitionalis*)  
Green Gentian (*Frasera caroliniensis*)  
Woodland Agrimony (*Agrimonia rostellata*)  
Puttyroot (*Aplectrum hyemale*)  
Hooker's Orchid (*Platanthera hookeri*)  
Nodding Pogonia (*Triphora trianthophora*)  
Blunt-lobe Grape Fern (*Botrychium oneidense*)  
Indiana Bat (*Myotis sodalis*)  
Eastern Small-footed Myotis (*Myotis leibii*)  
West Virginia White (*Pieris virginianensis*)  
Shining Bedstraw (*Galium concinnum*)  
Rough Avens (*Geum virginianum*)  
Two-ranked moss (*Pseudotaxiphyllum distichaceum*)  
Northern Monkshood (*Aconitum noveboracense*)  
Yellow Giant-hyssop (*Agastache nepetoides*)  
Kentucky Warbler (*Geothlypis formosa*)  
Lowland Fragile Fern (*Cystopteris protrusa*)  
Giant Pine-drops (*Pterospora andromedea*)

## Identification Comments

Beech-maple mesic forest communities are closed-canopy hardwood forests with codominating sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*). This is a broadly defined community type with several regional and edaphic variants. These forests occur on moist, well drained, usually acid soils. There are many spring ephemerals that bloom before the canopy trees leaf out. Hemlock (*Tsuga canadensis*) may be present at a low density. In the Adirondacks a few red spruce (*Picea rubens*) may also be present.

## The Best Time to See

Because the key to distinguishing a beech-maple mesic forest from related types is its vascular plant composition and diversity, it is easiest to identify the community during the growing season, from late May through summer. Striking seasonal leaf color can be enjoyed in the fall.

## Characteristics Most Useful for Identification

The codominance of American beech and sugar maple and a variety of herbaceous species, including a good display of spring ephemerals, identify this community. Typically there is also an abundance of tree seedlings, especially of sugar maple; beech and sugar maple saplings are often the most abundant small trees in the understory, along with shrubs such as American witch-hazel (*Hamamelis virginiana*) and hobblebush (*Viburnum lantanoides*).

## Elevation Range

Known examples of this community have been found at elevations between 320 feet and 3900 feet.

## Similar Ecological Communities

**Rich mesophytic forest:** Rich mesophytic forests occur on the Allegheny Plateau of southern New York and have a richer herb component, including such herbs as Canada waterleaf (*Hydrophyllum canadense*), running strawberry bush (*Euonymus obovata*), yellow mandarin (*Disporum lanuginosum*), and black bugbane (*Cimicifuga racemosa*).

**Maple-basswood rich mesic forest:** Maple-basswood rich mesic forests have a higher diversity of rich-soil herbs, including a variety of fern species and many spring ephemerals. Beech-maple mesic forests have more acid-tolerant herbs and ferns, and a slightly lower diversity.

## Characteristic Species

### Trees > 5m

Red Maple (*Acer rubrum*)  
Sugar Maple (*Acer saccharum*)  
Yellow Birch (*Betula alleghaniensis*)  
Sweet Birch (*Betula lenta*)  
American Beech (*Fagus grandifolia*)  
White Ash (*Fraxinus americana*)  
Red Spruce (*Picea rubens*)  
Wild Black Cherry (*Prunus serotina*)  
Red Oak (*Quercus rubra*)  
Eastern Hemlock (*Tsuga canadensis*)

### Shrubs 2-5m

Striped Maple (*Acer pensylvanicum*)  
American Witch-hazel (*Hamamelis virginiana*)

Hobblebush (*Viburnum lantanoides*)

**Shrubs < 2m**

Mapleleaf Viburnum (*Viburnum acerifolium*)

**Herbs**

Eastern Hay-scented Fern (*Dennstaedtia punctilobula*)

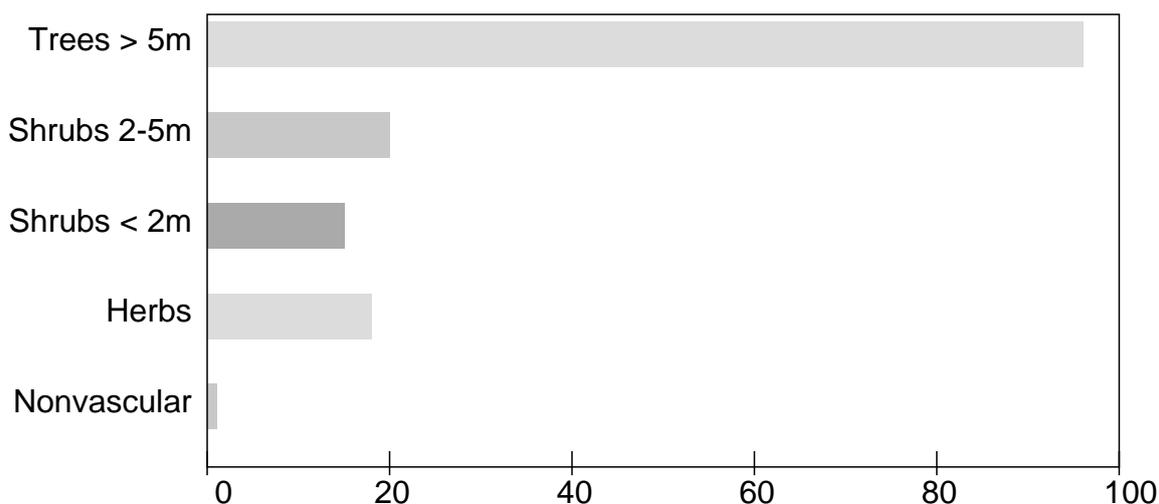
Spinulose Shield Fern (*Dryopteris carthusiana*)

Canada May-flower (*Maianthemum canadense*)

Christmas Fern (*Polystichum acrostichoides*)

Northern Starflower (*Trientalis borealis*)

Painted Trillium (*Trillium undulatum*)



This figure helps visualize the structure and "look" or "feel" of a typical beech-maple mesic forest. Each bar represents the amount of "coverage" for all the species growing at that height. Because layers overlap (shrubs may grow under trees, for example), the shaded regions can add up to more than 100%.

**International Vegetation Classification System Associations**

This New York natural community encompasses all or part of the concept of the following International Vegetation Classification (IVC) natural community associations. These are often described at finer resolution than New York's natural communities. The IVC is developed and maintained by NatureServe.

Beech - Maple Glaciated Forest (CEGL005013)

Central Appalachian Northern Hardwood Forest (CEGL006045)

Red Oak - Northern Hardwood Forest (CEGL006173)

Semi-rich Northern Hardwood Forest (CEGL006211)

Northern Hardwood Forest (CEGL006252)

## NatureServe Ecological System Associations

This New York natural community falls into the following ecological system(s). Ecological systems are often described at a coarser resolution than New York's natural communities and tend to represent clusters of associations found in similar environments. The ecological systems project is developed and maintained by NatureServe.

Laurentian-Acadian Northern Hardwoods Forest (CES201.564)

North-Central Interior Beech-Maple Forest (CES202.693)

## Additional Resources

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This project is made possible with funding from:

- New York State Department of Environmental Conservation Hudson River Estuary Program
- Division of Lands & Forests, Department of Environmental Conservation
- New York State Office of Parks, Recreation and Historic Preservation

Information for this guide was last updated on Mar 18, 2013

This guide was authored by