

New Jersey Fact Sheet: Atlantic White-cedar

Introduction

The Atlantic white-cedar (*Chamaecyparis thyoides*) is a native coniferous tree found along the East coast of the United States and parts of the Gulf coast east of the Mississippi River. Historically, it was more common, occurring in many different geographic regions within 50 miles of the coast. Today in New Jersey, Atlantic white-cedar is typically found in the Pinelands along streams and in lowland swamps, but it still can be found in a few small, isolated pockets in the northern part of the state, including parts of High Point State Park and Waywayanda State Park. Cedar-dominated forest communities are ecologically unique and globally rare; they provide vital resources to a wide variety of wildlife and plant species, many of which may be threatened, endangered, or otherwise rare.

As a valuable timber species, Atlantic white-cedar provides economic benefits in addition to its high ecological and aesthetic value. This tree has been harvested since the time of European settlement. Historically, the United States had about 500,000 acres of Atlantic white-cedar swamp, with 115,000 acres in New Jersey alone. These habitats stretched across the Pinelands and into the Hackensack Meadowlands and the Sandy Hook peninsula. By 1986, fewer than 40,000 acres remained in New Jersey, and in 1995 the range-wide acreage was estimated at 115,000 acres. The drastic reduction in this forest type is related to overexploitation, changes in land use, and several environmental factors. Proper forest management and restoration efforts can help enhance and expand the extent of this valued forest ecosystem.

Characteristics

Atlantic white-cedars typically grow in wetland areas with acidic soils. Mature forests form dense stands that allow little light to reach the forest floor. The herbaceous layer within these stands is normally comprised of hummocks of sphagnum moss, liverworts, ferns, insectivorous plants, and orchids. Atlantic white-cedar swamps provide vital resources and habitat to several rare orchids, including the crested yellow orchid (*Platanthera cristata*), and can also support populations



Atlantic white-cedar (*Chamaecyparis thyoides*) (©Robert Mohlenbrock, USDA, NRCS 1995)

of the federally endangered swamp pink (*Helonias bullata*) as well as the rare curly grass fern (*Schizaea pusilla*). The midstory of this habitat type is generally sparse due to the lack of sunlight within the forest stand, but several shrub and small tree species, including sweet pepperbush (*Clethra alnifolia*) and inkberry (*Ilex glabra*), are common in these forests. Red maple (*Acer rubrum*) and other tree species tolerant of saturated soils can also grow in low numbers in Atlantic white-cedar stands.

Benefits

Atlantic white-cedar wood is generally very durable and rot resistant, yet lightweight, aromatic, and evenly straight-grained. These characteristics make it a highly valuable material for siding, shingles, fencing, poles, channel markers, furniture, and hunting decoys. It was also a frequently used material for boats, while fishermen sometimes would string up and store the day's harvest on strips of the tree's bark.

Atlantic white-cedar forests also provide critical resources to several species of endangered and threatened wildlife. The caterpillar of the rare Hessel's hairstreak (*Callophrys hesseli*) feeds exclusively on Atlantic white-cedar, making this species of special concern dependant on healthy cedar forests to complete



Atlantic white-cedar produces valuable timber used in many wood products, including hunting decoys (©Mike Bisignano)

- Providing excellent insulation, staying cool in the summer and warm in the winter

This rare and valuable forest habitat provides many ecological and economic benefits, so proper management and restoration efforts are crucial in maintaining ecosystem health and sustainable forestry practices.

Management Options

If site conditions are favorable, a landowner may be able to enhance Atlantic white-cedar populations by improving existing cedar stands or converting suitable land to cedar forests. Atlantic white-cedar has exacting requirements and it is recommended that these efforts be guided by a Forest Stewardship Plan developed by an approved forester who can evaluate site conditions and maximize success. The Forest Stewardship Plan will reflect the guidelines in the New Jersey Division of Parks and Forestry's *NJ Forestry and Wetlands Best Management Practices Manual* and the *NJ Atlantic White-cedar Ecology and Best Management Practices Manual*. Forestry work done in the Pinelands may also be regulated under the New Jersey Pinelands Commission's Comprehensive Management Plan; an approved forester will be able to help secure any necessary permits and ensure that work conforms to current regulations.

Managing and Enhancing Existing Stands

A Forest Stewardship Plan that integrates Forest Stand Improvement techniques will usually present the best options for managing established Atlantic white-cedar populations. The plan may include the following:

1. Remove select competitive hardwoods and dead or dying trees
2. Clear-cut small patches or strips to encourage seedling regeneration
3. Encourage natural regeneration from the existing

its life cycle. Adults are often observed nectaring on flowering plants that are in close proximity to Atlantic white-cedar. The black-throated green warbler (*Dendroica virens*), another species of special concern, will also use these habitats almost exclusively for breeding in New Jersey. Atlantic white-cedar forests provide many other rare plant and animal species with valuable resources, including the Pine Barrens treefrog (*Hyla andersonii*), barred owl (*Strix varia*), and timber rattlesnake (*Crotalus horridus*). These habitats also provide important wintering resources for many mammal species, including the eastern cottontail rabbit (*Sylvilagus floridanus*). The ecological and economic benefits of Atlantic white cedar include:

- Filtering and purifying water, stabilizing stream banks, and storing stormwater runoff
- Providing valuable timber that is durable, rot-resistant, straight-grained, lightweight, and aromatic
- Creating a natural firebreak due to the high moisture levels and humidity (this depends greatly on the severity of the fire, the wind direction, and other factors)



(From left to right) The endangered swamp pink (Mike Crewe, NJA), the rare Hessel's hairstreak (©Chris Davidson), and the threatened Pine Barrens treefrog (©Brian Zarate) are just some of the rare and unique plants and animals that rely on resources provided by Atlantic white-cedar stands.

seed bank or use artificial regeneration by planting seedlings within these cleared areas

It is best to undertake all harvest activities during dry and frozen conditions to minimize impacts to the wetland. When available, attempt to use existing roads for all forestry practices. If road construction must cross wet areas, consider using low-ground-pressure tracked equipment, mats, and log corduroy roads. This will ensure weight is dispersed evenly across the soil, minimizing compaction.

Creating New Stands

When converting other habitats to Atlantic white-cedar stands, it is important to consider all possible options and techniques. The following are a few examples of what to look for:

1. Select sites that have suitable soil and hydrology types as well as areas that may have previously supported Atlantic white-cedar (e.g. cranberry bogs, hardwood swamps)
2. Prepare the site by removing all vegetation via clear-cutting, mechanical cutting and removing, drum chopping, disking, herbicide application, and/or hand removal
3. Encourage natural regeneration from the existing seed bank or use artificial regeneration by planting seedlings within these cleared areas
4. Protect new growth from various threats, including:
 - Deer browse—construct a deer exclosure fence to prevent overbrowse of seedlings
 - Wildfire—clear site and manage surrounding areas to reduce fuel load
 - Flooding—periods of prolonged oversaturation may cause mortality in trees, especially seedlings; prevent flooding from beaver invasion (The NJ Division of Fish and Wildlife offers a trap and release program; more information can be found at <http://www.state.nj.us/dep/fgw/index.htm>)



Atlantic white-cedar seedlings require ample sunlight and favorable soil and hydrological conditions in order to grow (John Parke, NJA)

5. Ensure the success of new growth by employing follow-up treatments to remove competing vegetation via hand removal or targeted herbicide application

The source of regeneration for the site should come from either a natural seed source (e.g. a nearby stand), collected seeds, or planted nursery stock from a trusted facility. It is important to monitor and maintain the regenerating seedlings until the stand becomes established.

Technical and Financial Assistance

A Forest Stewardship Plan will usually present the best options for Atlantic white-cedar management based on the landowner's goals and the site conditions. The landowner is typically responsible for the costs of development and implementation of a Forest Stewardship Plan. However, qualifying landowners in New Jersey have several options for obtaining technical and financial assistance for forest management.



An old blueberry field (left) (Jean Lynch, NJA) was cleared in order to create a new Atlantic white-cedar stand in Ocean County, NJ. The soil type in this particular site provides favorable conditions for Atlantic white-cedar, making it an excellent site for restoration. Under a Forest Stewardship Plan, seedlings were planted (middle) (John Parke, NJA) and a deer exclosure fence (right) (Kristen Meistrell, NJA) was constructed to protect plants from browse.



Atlantic white-cedar typically forms dense, even-aged stands (left) (Kristen Meistrell, NJA) that allow little light to reach the forest floor (middle) (John Parke, NJA). These characteristics make this habitat type valuable for many plants and animals, including the state-threatened barred owl (right) (John Parke)

The Natural Resources Conservation Service (NRCS) offers technical and financial assistance to forest landowners through the Environmental Quality Incentives Program (EQIP). Eligible landowners with 10 acres of forest land may receive cost-share assistance for the development of a Forest Stewardship Plan, or for costs related to site preparation, invasive plant removal, seedling protection, and fencing when part of an approved Forest Stewardship Plan. Forest Stewardship Plans cost-shared through EQIP must be prepared by an NRCS-approved Technical Service Provider (TSP). A list of TSPs can be found at a local NRCS service center or on the New Jersey NRCS website.

NRCS office locations and more detailed information about NRCS assistance and the EQIP program can be found at: www.nj.nrcs.usda.gov/



New Jersey Audubon’s S.A.V.E.™ (Support Agricultural Viability and the Environment) program uses sustainable timber harvested from Atlantic white-cedar trees to create bird houses and bird feeders. (Gylla McGregor, NJA)

Fore More Information:

General Information on NRCS Forestry Programs
www.nj.nrcs.usda.gov/technical/forestry/index.html

Information on NRCS EQIP Program
www.nj.nrcs.usda.gov/programs/eqip/forestry.html

Locating an NRCS TSP
<http://techreg.usda.gov/CustLocateTSP.aspx>

NRCS Plant Fact Sheet – Atlantic White-cedar
http://plants.usda.gov/factsheet/pdf/fs_chth2.pdf

NJDEP, Division of Parks and Forestry - Information on Atlantic White-cedar
http://www.state.nj.us/dep/parksandforests/forest/njfs_awc_initiative.html

List of NJDEP-Approved Consulting Foresters
www.state.nj.us/dep/parksandforests/forest/ACF.pdf

NJ Atlantic White-cedar: Ecology and Best Management Practices Manual order form
http://www.state.nj.us/dep/parksandforests/forest/AWC_BMP_order.pdf

NJ Forestry and Wetlands Best Management Practices Manual
www.state.nj.us/dep/parksandforests/forest/nj_bmp_manual1995.pdf

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