

Red Cedar Forest

A photograph of a Red Cedar forest. The foreground is dominated by several large, textured tree trunks with deeply furrowed bark. The ground is covered in a layer of brown leaves and some green plants. In the background, a dense canopy of green leaves is visible, with many thin tree trunks rising up. The overall scene is a lush, green forest.

This habitat is dominated by Red Cedar, and the stands often have few other tree species. In Columbia County, most such forests arise on post-agricultural land, especially on limy soils. The Red Cedars tend to get overtopped and die as forest succession progresses. These dense forests are favored wildlife habitat, and Red Cedar has long been valued for fence posts and other uses.

First Glimpse

Seen from afar, patches of Red Cedar Forest stand out in all seasons with their dark, bluish-green color and low, densely packed, pointed tree tops. Where a Red Cedar stand borders a field, one can often observe a clear browse line below which branches are meticulously clipped, indicating the maximum height that browsing Deer or livestock can reach.

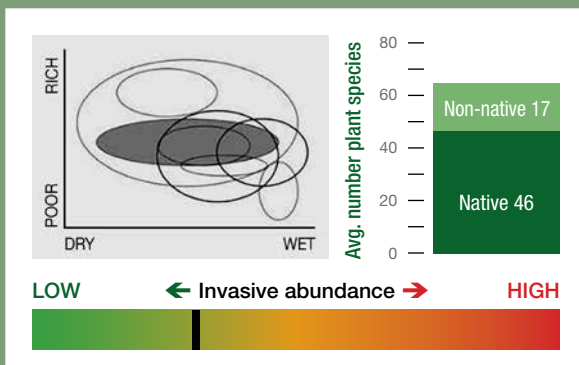
Inside the forest, darkness is a primary descriptor and, together with the sometimes daunting tangle of poking branches and sharp foliage, can make Red Cedar Forests seemingly inhospitable places. The understory vegetation tends to be sparse for lack of light. The litter of needles and twigs may be spongy and occasionally marked by moss, but it's a bit too prickly to be called "soft." The Red Cedar trunks are often fluted, and their reddish-brown bark peels off in narrow fibrous strips that are prized nesting material for several bird species.

Many animals cherish the shelter from the elements and from predators provided by Red Cedar Forests. If you find a Deer trail or get down on your hands and knees and plunge in, you can encounter a closeted world of its own. Look for the signs of animal life—the rabbit droppings, the owl pellets, the remains of Raccoon-retrieved corn cobs, the birds' nests, and the wildlife thoroughfares. As the forest matures, the lower branches self-prune, and eventually the mature Red Cedar Forests have the dark but open and more inviting understory typical of other mature evergreen forests.

Once you learn to recognize Red Cedar, there's no mistaking this forest type.



Red Cedar trees colonizing a field. The horizontal browse line indicates how high Deer can reach into the branches.



Location

Red Cedar can be among the first woody plants to become established in abandoned pastures and hayfields, and whole forests of Red Cedars sometimes develop in post-agricultural areas. Red Cedar Forests tend to be most common in areas of calcium-rich, clayey soils in the Hudson River Corridor, the Southwestern Swales, and the Central Flatland of Columbia County, but can also be found on the limy soils of the Harlem Valley.

Distribution of Red Cedar Forest and Places to Visit

1. Stockport Cons. Area
2. Greenport Cons. Area
3. Olana State Park
4. Keep Cons. Preserve
5. Clermont State Park



Visiting

There are several Red Cedar Forests on lands open to the public in the western part of the County. The largest examples can be experienced in the eastern portion of Clermont State Park, at the Keep Conservation Preserve, and at the Greenport Conservation Area. All these sites can be visited year-round, but might be most appreciated for their cool shade in the heat of the summer and for their protection from cold winds in the winter.

What to Look For

Plants: forest canopy is mostly of Red Cedar, but is sometimes shared with other trees such as Black Cherry, Red Oak, Shagbark Hickory, Hop-hornbeam, and White Pine. Large Oriental Bittersweet vines often reach into the canopy. The forest floor tends to have few plants where it is deeply shaded, and perhaps also due to the “allelopathy” of the Red Cedar, which releases toxic substances that can interfere with the germination or growth of other plants. However, where some light reaches the ground, one encounters a carpet of low-growing Virginia Creeper, Oriental Bittersweet, and—to a lesser extent—Poison Ivy vines.



Red Cedar fruits (berry-like cones borne only on female trees).

Shrubs usually include several invasive species typical of overgrown pastures, such as Common Buckthorn, Eurasian Shrub Honeysuckle, Japanese Barberry, and Multiflora Rose. The understory also harbors young trees of the species that will eventually replace Red Cedar. Usually the Red Cedar trees that compose the canopy in these forests ultimately die when they are overtopped and shaded out by deciduous trees.

Most of the plant species of conservation concern found in this habitat are southern species that, in our region, are associated with dry soil or sunny, rocky outcrops. None of these species is typical of Red Cedar Forests, but they find suitable conditions on some small knolls or dry slopes with widely spaced Red Cedar trees.

Birds & Mammals: Many bird species, including several species of conservation concern, use Red Cedar Forests. These forests provide nesting habitat for Cooper’s Hawk, and roosting habitat for owls—especially Eastern Screech-Owl, Short-eared Owl, and Northern Saw-whet Owl. A variety of songbirds, including Field Sparrow, Eastern Towhee, and Brown Thrasher, also use Red Cedar Forests for nesting and roosting. Insectivorous birds such as Black-capped Chickadee and Golden-crowned Kinglet forage in

Characteristic Plants

The following species are common in this habitat, but not necessarily unique to it.

- * Indicator species ○ Non-native species
- Invasive species

TREES

- Black Cherry
- Hop-hornbeam
- Red Cedar *
- Red Oak
- Shagbark Hickory
- White Pine

SHRUBS

- Common Buckthorn ●
- Eurasian Shrub Honeysuckle ●

VINES

- Oriental Bittersweet ●
- Poison Ivy
- Virginia Creeper

FORBS (e.g. WILDFLOWERS)

- Blue-stemmed Goldenrod
- Common Speedwell ○
- Garlic Mustard ●
- Virginia Stickseed
- White Snakeroot
- White Wood Aster

GRASSES, SEDGES, & RUSHES

- Japanese Stilt Grass ●



Red Cedar with typical fluting trunk and bark peeling vertically in narrow, fibrous strips.



Little Hairless Ant tending root aphid. The aphids suck plant juice from roots and excrete sugary liquid, which in turn is consumed by the ants.

Red Cedar, and the fruits—blue, berry-like cones with a whitish bloom—are eaten by many bird species, including Cedar Waxwing (named for this tree), Eastern Bluebird, Ruffed Grouse, Ring-necked Pheasant, and Turkey. The germination of Red Cedar seeds can in fact be hastened by passing through a bird’s digestive system, which weakens the hard seed coat.

Some mammals seek the dense Red Cedar stands for shelter, especially during the colder months. Tracks of Eastern Cottontail, Raccoon, and Deer are common. The fruits of Red Cedar are eaten by mammals such as mice and voles, Eastern Cottontail, Red and Gray Foxes, Raccoon, Striped Skunk, Opossum, and Coyote. Deer browse on the foliage when better forage is unavailable.

Amphibians: We have found a surprising number of frogs in this habitat, probably because several of the Red Cedar sites we have surveyed were close to wetter areas. Wood Frogs were the most common, but we also recorded Pickerel Frogs and Spring Peepers. As in many other forests, Red-backed Salamanders can be found living under rocks and logs.

Insects & Other Invertebrates: Earthworms were relatively scarce in our surveys of Red Cedar Forests. Ground beetles were uncommon, and none of the species were



Yellow Star Grass (which is not a grass at all) is a southern plant rarely found in the Hudson Valley.



Cedar Waxwing by John James Audubon.

Some Species of Conservation Concern

Geographic region of conservation concern is indicated by **CC** (Columbia County), **HV** (Hudson Valley), **NYS** (New York State), **US** (United States); see Introduction for explanation.

PLANTS

False Pennyroyal	NYS
Hackberry	HV
Late Purple Aster	CC
Pennsylvania Pellitory	HV
Pleated-leaved Knotweed	NYS
Rusty Woodsia	HV
Shrubby St. John’s Wort	NYS
Spotted Wintergreen	CC
Tufted Hair Sedge	HV
Virginia Three-seeded Mercury	NYS
Yellow Star Grass	HV

BIRDS

Brown Thrasher	US
Cooper’s Hawk	US
Eastern Towhee	US
Field Sparrow	US
Golden-crowned Kinglet	HV
Northern Saw-whet Owl	US
Ruffed Grouse	US
Short-eared Owl	NYS

BUTTERFLY

Juniper Hairstreak	HV
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Juniper Hairstreak is a rare native butterfly whose caterpillars feed on Red Cedar needles.

unique to this habitat. The most common species of ants were also widespread ones generally associated with moist forests and fields. The most unusual ant species that occurred with some frequency was the Little Hairless Ant (*Brachymyrmex depilis*). These ants are associated with root aphids, which provide the ants with sugary excretions while presumably the aphids receive the ants' protection.

Red Cedar is the caterpillar food plant of the Juniper Hairstreak, a beautiful emerald-green butterfly that we have found at several Red Cedar sites. Pine Elfyn also reportedly feeds on Red Cedar, but we have found it primarily around White Pine. A few moth species are Red Cedar specialists, but we have only seen the Juniper-twig Geometer, which we found at a nearby Connecticut site. This moth is widespread and likely also occurs in Red Cedar Forests in Columbia County.

Similar Habitats and Variation Within the Habitat

Red Cedar Forests resemble other conifer forests in their evergreen canopy and shaded understory. However, the distinctive Red Cedar trees, even when fully grown, tend to stay relatively small (maximum 30 feet tall) in our region, while mature Hemlock or White Pine can grow to twice that height or more. "Red Cedar Woodland"—a different kind of habitat characterized by widely spaced Red Cedars with small meadow-like areas between—is found in Dutchess County and might also occur in Columbia County; it can harbor a number of rare plant species in the grassy openings.

Stewardship

Although it may have occurred historically in other situations, Red Cedar Forest today is an example of a transitional habitat that establishes after disturbance. These days, that disturbance is typically agricultural. If Red Cedar Forests start to disappear from our landscapes because of waning agricultural abandonment, landowners may want

to actively manage for Red Cedar stands so that we do not lose their contributions to regional biological diversity. This might involve selective logging of other tree species that get established in Red Cedar stands and threaten to shade out the Red Cedars, or the creation of small clearings in Red Cedar Forests to provide light-filled space that would allow Red Cedar trees to regenerate. However, the invasive shrubs and vines often associated with Red Cedar Forests will also be encouraged by these interventions, so care should be taken to thwart their spread.



Juniper-twig Geometer is a moth species that relies on Red Cedar as food for its caterpillars.



The invasive vine *Oriental Bittersweet* growing in tight spirals around a Red Cedar tree. It is commonly found in Red Cedar Forests and can strangle the trees it grows around.



A Red Cedar Forest with a dense carpet of *Japanese Stilt Grass*. Although this invasive species is not unique to Red Cedar Forests, it sometimes dominates the ground in this habitat.

History

Red Cedar is one of the first trees to colonize certain fields, especially pastures on limy soils. The lower branches of browsed Red Cedar are bristly and deter feeding by cattle. In pastures that are only grazed occasionally and are eventually abandoned, Red Cedar gets a head start and can dominate early reforestation. In our area, Red Cedar thickets almost always indicate abandonment after historical agriculture. Prior to European settlement, Red Cedar probably occurred here primarily as individual trees in early succession after fires, as longer-lived trees on ledges, and perhaps—surprisingly enough—as a swamp tree.

It is not uncommon to find the skeletons of dead Red Cedars in the understory of more mature woods, hinting at a past Red Cedar stage of reforestation. Occasionally we find large, old Red Cedars. One particularly large individual we found had evidently grown up along a fence row. Still alive, it had apparently reached a sufficient height before having to face competitors for sunlight. Red Cedars probably die out of stands not because of an inherently short life span (they can live for 300 years), but rather because a slow growth rate and shade intolerance means that they are often shaded out by taller, faster-growing trees.



Dead Red Cedar in a forest of deciduous trees that has grown up around it.

Indigenous use of Red Cedar in our region is somewhat unclear, not only because we know so little about early regional Native American plant use, but also because early accounts rarely differentiated Red Cedar from certain other conifers. In some cases, canoes were apparently made from Red Cedar, and the bark was used as a fiber. The Iroquois and Delaware reportedly used it for colds, joint pain, and as a diuretic. Europe hosts a similar tree species, and the use of Red Cedar by European settlers and their descendants was likely influenced by both indigenous knowledge and European traditions (where cedar's

essential oil was known as “savin”). The most commonly reported medicinal uses by European settlers were for bladder ailments and to control menstruation. Early-nineteenth-century botanist Constantine Rafinesque reports its frequent use in treating horses.

While Red Cedar's appearance in pastures probably frustrated early settlers, there is no doubt that the tree was also useful and sought after. In 1770, Swedish traveler Peter Kalm reported that most boats on the Hudson River were made out of oak and Red Cedar. As a rot-resistant native tree, it was also used for street curbs, wooden pails, shingles, bridge planking, and coffins. Its insect-repellent qualities made it ideal for cedar chests and closets to protect wool clothes from moths. However, the primary use of our small, local Red Cedars was apparently fencing, a use that continues to this day.

The wood is easy to work, pleasing in fragrance and color, and has a uniform, fine grain suitable for furniture making. During the nineteenth century, the heartwood of Red Cedar was used for pencils, a demand that reportedly decimated many of the remaining southeastern Red Cedar groves and may have affected local populations.

The Last Gift!
Cedar Chest
 Not quite as illustrated
\$29.95

Here's a beautiful walnut veneered cedar chest. Thoroughly mothproof, because it's built of sturdy 3-4 inch Tennessee red cedar. A smart decorative touch in the beakings and mouldings. Full 48 inches long.

An advertisement for a Red Cedar chest in the *Chatham Courier*, 1933. Columbia County newspapers throughout the 19th and early 20th century regularly advertised Red Cedar chests, coffins, shingles, and fence posts. As 19th century botanist John Torrey notes, however, uses requiring large planks or timbers probably relied on trees from farther south, where they grew larger, as was clearly the case for this chest made from “Tennessee Red Cedar.”

Many farmers speak of the prized rot-resistant value of Red Cedar wood for fence posts and other outdoor uses. “That’s what farmers always used before chemicals, because they can have ground contact,” explained a farmer we spoke with in Clermont.

Perspectives

The Red Cedar Forest image that we invited people to view and respond to in our landscape photo survey did not overly impress. Several people interpreted the landscape to be “dead” or “barren.” Over a third of the people could not think of any species that they would associate with such a place. In comparison with the 18 other habitats people viewed, the Red Cedar Forest came in close to last in likeability and had similarly low relative marks in all other categories, including perceived aesthetic, recreational, and ecological value. This was true for biologists and land managers who took the survey, as well as for recreationalists.

Despite these survey results, Red Cedar, both as trees and forests, are highly valued by some people. Birders often seek them out because of their aforementioned role as bird habitat. Indeed, one local birder was rewarded with some interesting observations of Cedar Waxwing behavior in a Red Cedar Forest. As he explained, “The Cedar Waxwings will take the fruit and pass it along from one to the other. They’re very communal and very good about being nice to each other.”

Many farmers speak of the prized rot-resistant value of Red Cedar wood for fence posts and other outdoor uses. “That’s what farmers always used before chemicals, because they can have ground contact,” explained a farmer we spoke with in Clermont. “Old-time farmers also used them because they needed to keep their pas-

tures open,” she added. “It was part of a package.” She and her husband have been harvesting and selling Red Cedar from their property in this tradition, trying to reclaim land for grazing. Describing the farm they purchased in 2012, she explained, “This place had been an abandoned farm from around 1945, and just city people were using it, so they let it grow up and didn’t maintain the land, and we’ve been harvesting the cedar to put it back to pasture.” For this farm, it has been a slow and thoughtful process:

The standard is to clear-cut, bulldoze and burn or chip the growth to clear the land. I feel that would be a waste of natural resources. It has taken a lot longer with the approach that we used, but we were able to selectively leave areas of Cedar that the cows and wildlife will enjoy, have cleared areas with grass for them to graze, reduce erosion by leaving trees on erodible areas, plus we will have a supply of replacement fence posts as needed.

Meanwhile the fruits of this effort in the surrounding community have been many. “People have been able to use it [the Red Cedar] for myriad uses,” the farmer explained, citing fences, raised garden beds, and poles for growing Hops as just some of the local demand she has seen for their Red Cedar posts.



A Red Cedar Forest was part of this landscape photo survey at the Greenport Conservation Area.



The farmer we spoke with in Clermont provided this photo of Red Cedar that had been harvested from the farm in order to open land for grazing.



Interact with a Red Cedar Forest

Look for the “orange octopus”

There is a wild, colorful, and often-hidden story in the Red Cedar Forest that you can follow throughout the year and across species.



The “orange octopus” in the photo is actually the result of a native fungus, Cedar-apple Rust, which requires a species of juniper (such as Red Cedar) and one from the apple family (or one of its native relatives, such as a species of hawthorn) to complete its life cycle.

In winter, look for the woody, brown, shrunken galls from the Cedar-apple Rust on the Red Cedar branches. In spring, watch as these galls enlarge and send out many spiky “telial horns” in all directions. Perhaps the most striking sight comes after a period of cool, rainy spring weather when these horns develop into long, orange, gelatinous, spore-releasing tentacles.

The spores are carried by the wind to nearby apple or crabapple trees, where they settle on moist leaves or fruit and develop orange pustules and other structures of Cedar-apple Rust, a bane of orchardists. These pustules in turn release spores that disperse to reinfect Red Cedars, and so the cycle continues. In summer, look for the small greenish-brown swellings of the young galls on the Red Cedars.

Although the fungus does little damage to the Red Cedar, the Rust blemishes the skin of apples and thus diminishes the commercial value of apple crops. As a result, Red Cedars are sometimes removed from around orchards.

Do you notice any wild or cultivated apple trees in the vicinity of the Red Cedar Forest you are in? Do you see any signs of the Rust on the apple leaves or fruits?

Top left to lower right: A Cedar-Apple Rust gall before, during, and after the development of the orange “telial horns.”

