Seeing the Landscape in Landscape Art

Edward K. Faison

In 1825, a young British immigrant, captivated by the wild scenery of the Hudson River and nearby Catskill mountains, endeavored to promote America's natural wonders as a distinctive national identity. That year Thomas Cole began painting the undeveloped landscapes of the Northeast with romantic grandeur and literal exactitude, inspiring a cadre of followers that produced America's first painting movement. The Hudson River School (HRS), as the movement was later named, thrived for the next half century before being replaced by the misty, ethereal landscapes of the tonalists made famous by George Inness in the 1880s and 1890s. In an ironic twist, a painting fraternity (the HRS) founded to celebrate America's wilderness became synchronous with a brief period in the northeastern United States in which the landscape was altered to a greater extent than at any time since the last ice age. Because photography was in its infancy during this period and because intensive observation and faithful depiction of nature as well as the study of natural science were integral to the HRS's ethos, nineteenth century American landscape painting affords a window into the dramatic ecologi-

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Thomas Cole's 1836 painting, *View from Mount Holyoke, Northampton, Massachusetts, after a Thunderstorm—The Oxbow*. Cole included a portrait of himself working at his easel, dwarfed by the surrounding forest, in the lower center of the painting.

Deforestation is evident in George Inness's *The Lackawanna Valley,* circa 1856.

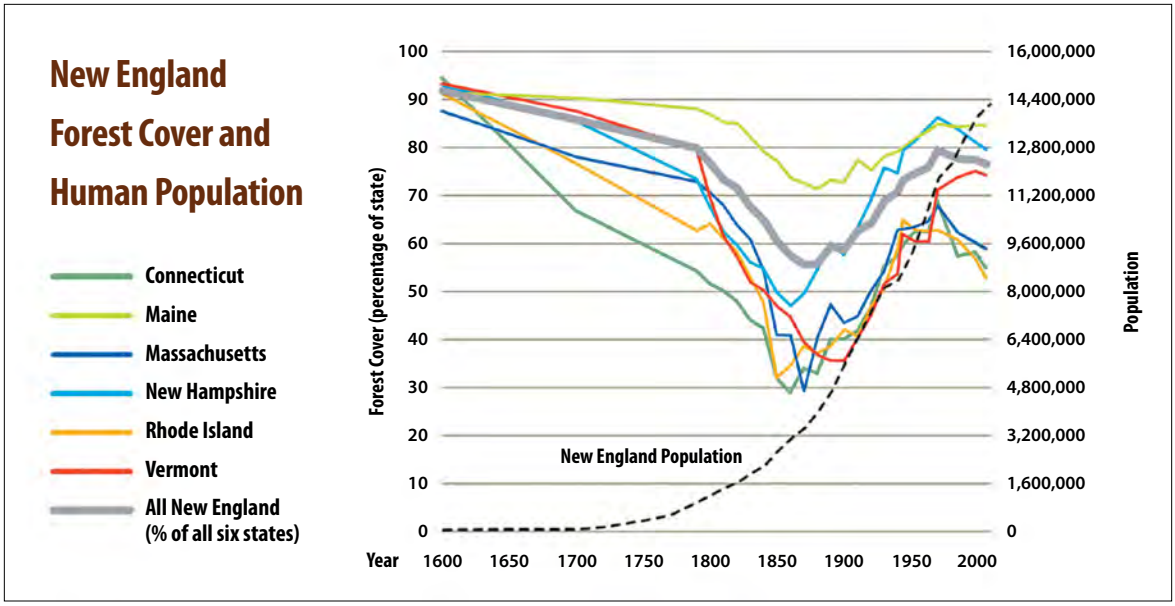
cal changes that occurred across the region. In turn, these spectacularly rendered landscapes, when viewed with an eye toward ecology and natural history, can be seen afresh.

From Forests to Fields

Few paintings capture the overarching landscape dynamic of nineteenth century northeastern North America as effectively as Cole's *View from Mount Holyoke, Northampton, Massachusetts, after a Thunderstorm—The Oxbow.* Painted in 1836, *The Oxbow* depicts a wild, storm-battered forest clinging to the slopes of Mount Holyoke under a darkened sky, juxtaposed against a sunlit, cultivated landscape surrounding the Connecticut River's oxbow below. Cole seems to capture the moment just before humanity on the right sweeps across the canvas and conquers the remaining wild nature on the left. Cole was certainly aware of and somewhat ambivalent toward the dramatic changes to the land that were occurring around him. Although he admired the cultural achievements of Europe and anticipated similar cultural greatness in America, he also decried the rapid loss of forest that inevitably accompanied the advancement of civilization. In 1841, Cole wrote on behalf of the forest:

> Our doom is near … These slumbering mountains, resting in our arms, Shall naked glare beneath the scorching sun, And all their wimpling rivulets be dry. No more the deer shall haunt these bosky glens, Nor the pert squirrel chatter near his store. A few short years! —our ancient race shall be, Like Israel's, scattered 'mong the tribes of men.

Cole wasn't far from the truth. In fact he was witnessing one of the greatest acts of deforestation the world has ever known. While forest clearance took several centuries in Europe, in eastern North America it was largely condensed into two generations. From about 1810



This figure shows changes in forest cover in the New England states compared to human population.

to 1870, much of the forested northeastern United States was transformed into a mosaic of agricultural fields and cut-over woodlots. By mid-century every New England state except for Maine was less than 50% forested. Southern New England and Vermont, at their nadir, were only 30 to 35% forested (see figure above), and by the 1880s New York state was reported to be less than 25% forested.

George Inness reveals this dramatic toll on the northeastern forest in *The Lackawanna Valley* (circa1856). This prominent early work by Inness depicts the stump-strewn landscape around the incipient Scranton, Pennsylvania, bisected by a churning locomotive, all witnessed by a central, reclining bystander. It is both a jarring scene of the raw conversion of forest to field and a powerful statement that humanity is no longer dwarfed in the presence of wild nature (as Cole portrayed himself in *The Oxbow*) but rather dominion over it.

A decade after Inness's *The Lackawanna Valley*, Jasper Cropsey painted a nearby northeastern Pennsylvania landscape. *The Valley of Wyoming* (1865) depicts a sweeping landscape so open, with fields ascending high on the slopes of the distant hills, it suggests a savanna landscape of the American west or east Africa, with scattered trees and expansive grassland rather than the eastern deciduous forest landscape that it is. The stumps are gone, evoking a subdued and bucolic scene in which cows and people lounge peacefully beneath what appears to be a spreading, vase-like elm tree. A myriad of colors emanate from the variety of land uses—hay meadow, cow pasture, various grain fields—of the surrounding fields. Indeed, habitat destruction is often far from our mind when we view agrarian scenes like the *The Valley of Wyoming*. There is good reason for this response. An elevated perch overlooking an open plain with scattered trees and nearby water is the single most appealing landscape to humans, simulating our ancestral savanna home in Africa and closely describing many nineteenth century landscape paintings.

But as *The Lackawanna Valley* poignantly reminds us, semi-open landscapes, though innately appealing, do not occur naturally in the environment of the northeastern United States. They are almost entirely the result of deforestation followed by sustained disturbance by human activity. The moist, temperate climate in this region does not sustain grasslands and savanna; instead it grows forest almost

Jasper Cropsey's *The Valley of Wyoming*, 1865, depicts the agrarian landscape that replaced eastern forests. Courtesy of the Metropolitan Museum of Art.

everywhere except for a few inhospitable and temporarily disturbed locations. As forest ecologist E. Lucy Braun (1950) wrote:

> When the Pilgrims came to this continent, New England was covered by forest interrupted only where lakes or bogs and river swamps made tree growth impossible; where sand deposits near the coast were unsuitable for closed stands; where fire or windfall had temporarily destroyed the forest; where Indians had burned the forest (especially near the coast); and where rock outcrops occurred in the more rugged sections.

One would have to travel back 12,000 to 14,000 years to the end of the last ice age to find an environment that supported open landscapes in the Northeast at a scale comparable to the agrarian landscapes of the nineteenth century. Then, cold climates south of the waning ice sheet sustained a mix of tundra grasses and sedges and scattered spruce trees in an open "spruce parkland." Mastodons, the now extinct cousins of modern day elephants, were common in this transitional landscape between tundra and forest, and these large herbivores probably helped maintain the landscape's semi-open character, much the way elephants do in African savannas today.

Disturbances in the Nineteenth Century Landscape

The tranquility evoked by Cropsey's *Valley of Wyoming* belies the relentless disturbances required to maintain agrarian landscapes of the Northeast in a semi-open state. However, a closer look at the composition reveals some of these disturbances. In the left middle ground, we see farmhands cutting and collecting hay in an upland meadow near a gray barn. The arduous task of cutting hay meadows by hand provided fodder for livestock in winter, and simultaneously prevented trees and shrubs from invading and overtaking the grass. Cattle

Edge of the Forest **(1891) by George Inness shows a forest ecosystem altered by human interventions. Courtesy of Yale University Art Gallery.**

themselves were anything but passive inhabitants of the landscape. In the hill pasture in the right foreground, a well-worn path, short cropped grass, exposed rocks, an eroding slope, and even the prominent elm tree all point to the intensive grazing and trampling effects of these animals. Somewhat parallel to the megafauna of the Pleistocene Northeast and contemporary East Africa, domestic livestock maintained grassy pastures by trampling and consuming tree and shrub seedlings.

The prominent elm appears to have been an artistic addition by Cropsey (it doesn't appear in his original field sketch), but it was still an ecologically appropriate addition. Elm trees are particularly resistant to soil compaction and intensive grazing and often were among the surviving trees in heavily grazed areas. As pictured in the left foreground, shrubs and young trees were largely relegated to hedgerows along stone walls, fences, or rock outcrops where they were less accessible to livestock. The source of the two distant rising smoke (or steam) trails is unclear; however, burning of fields was a common practice in the nineteenth century Northeast following harvesting of grain and hay. Like cattle grazing, fire prevented woody plants from establishing, including the thorny shrubs that cows often avoided.

Grazing and burning were not limited to open crop fields and meadows but also frequently occurred in nearby woodlands. *Edge of the Forest* (1891) by George Inness suggests the ecological effects of these disturbances. In this work, likely inspired by scenery near his home in Montclair, New Jersey, Inness invites us to peer through an open, parklike grove of trees with a lush herbaceous layer of grasses and tall

forbs ("wildflowers"). Understory shrubs and trees are sparse, and the ground flora is essentially a continuation of the adjacent meadow—a vegetation structure pleasant enough for a late afternoon stroll by the woman in the center of the composition. Inness's "forest" would be described by ecologists today as a savanna or open woodland. His title and composition therefore reveal much about the structure and disturbances of nineteenth century woodlands near settlements. By removing smaller woody plants, burning and grazing often left mature and fire resistant trees (e.g., oaks) to grow larger with reduced competition. Fire and grazing also reduced or removed the leaf litter, releasing herbaceous plants from the suppressive cover of the dead leaves. Selective cutting of trees for fuelwood further increased the openness of these stands, casting more light on the forest floor and promoting a thriving herbaceous layer. The tall wildflowers emerging above the grasses in the foreground create both depth and balance in the composition and are consistent with the effects of cattle preferentially grazing grasses over forbs.

Large Wildlife—Rare Symbols of the Wilderness

In 1856 Henry Thoreau lamented the depauperate large wildlife community in the fields and

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The white-tailed deer in Thomas Cole's 1825 landscape painting *Lake with Dead Trees* symbolize untamed wilderness.

woodlots of the eastern Massachusetts countryside, a sentiment that could have been applied to most of the region.

> But when I consider that the nobler animals have been exterminated here—the cougar, panther, lynx, wolverine, wolf, bear, moose, deer, the beaver, the turkey, etc., etc.—I cannot but feel as if I lived in a tamed, and, as it were, emasculated country … Is it not a maimed and imperfect nature that I am conversant with? As if I were to study a tribe of Indians that had lost all its warriors.

Given this condition of the northeastern fauna in the mid-nineteenth century, it is not surprising that large wildlife are rare in HRS paintings. White-tailed deer do figure prominently in several of Thomas Cole's early landscapes, including *Lake with Dead Trees* (1825), one of a trio of paintings that the artist produced from a trip to the Catskills that would launch his career and the HRS. In this work two deer pass by a lake lined with dead trees in front of a majestic, sunlit and snow-capped peak. The impetus for including deer is clear: a symbol of remote and untamed wilderness. The association of deer and wilderness seems incongruent to us today because we are familiar with an animal well adapted to a mix of forest edge, agricultural fields, and suburban backyards. But in the nineteenth century, deer were relegated to remote wooded areas as a result of unregulated subsistence hunting and a thriving market for hides and meat. Reflecting the severely depleted deer population, HRS landscapes portray deer only occasionally and almost invariably in remote wooded scenes (e.g., Worthington Whittredge's *Deer Watering*, circa 1875, in which deer drink under a vaulted, cathedral-like canopy of trees).

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A remote forest scene is evoked in Worthington Whittredge's *Deer Watering*, circa 1875

To a twenty-first century viewer, *Lake with Dead Trees* also suggests the possible presence of another large mammal, beaver. Dead trees along a lake shore typically result from rising water levels, and beaver dams are frequently the cause of water level changes in lakes and ponds. However, beaver, the largest rodent in North America and an early victim of the fur trade in New York and New England, were likely already gone from the Catskills by the time of Cole's 1825 sketching trip. By 1840, the few remaining beaver in northern New York were said to be so persecuted that they no longer built dams. Sadly but accurately, HRS artists rarely if ever portrayed beaver or beaver sign, despite the large number of paintings of forested streams and ponds, once the animal's prime habitat.

THE HAGGIN MUSEUM, STOCKTON CA

Albert Bierstadt's *Moose* was painted sometime after 1880 from sketches he made along the Maine/Nova Scotia border, an area that was one of the last strongholds in the Northeast for the species.

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Wolves were disappearing from the Catskills when Jacob Ward painted *Wolf in the Glen* in 1833.

Moose, the largest deer in the world, suffered a fate similar to that of white-tailed deer and were virtually eliminated from the region. Along with unrestricted hunting, habitat loss from deforestation was especially detrimental to this forest-dependent species. Albert Bierstadt, best known for his dramatic western landscapes, produced one of the few paintings of this animal in the Northeast, *Moose* (after 1880), from sketches made along the Maine/Nova Scotia border—the last stronghold in the northeastern United States during the late nineteenth century for moose. The paper birch (*Betula papyrifera*) in the right foreground combined with the red-berried and opposite branching hobblebush (*Viburnum lantanoides*) in the left foreground reveal this to be a cool northeastern forest.

Jacob Ward portrayed another symbol of the wilderness in *Wolf in the Glen* (circa 1833), a lone wolf (looking more like a wolfhound) at the iconic Kaaterskill Falls in the Catskills. By 1840 wolves were probably extirpated from the Catskills and most of New York south of the Adirondacks—the target of systematic extermination to protect livestock and to allay the fears of a public steeped in a tradition of reviling large carnivores. Ward's painting therefore poignantly depicts a once ubiquitous animal that was vanishing from southern New York just as

the HRS's celebration of the American wilderness was getting started. Few other HRS paintings depict wolves or other top predators such as mountain lions, wolverines, and black bears, all of which were hunted with similar fervor and suffered precipitous declines in the mid to late nineteenth century (all except black bears were completely extirpated from the region by the end of the century).

Remnant Old Forests

Despite the widespread transformation of forests to fields, as well as the dramatic alteration of farm woodlands, relatively sizeable tracts of old growth forest still existed in the mid-nineteenth century Northeast (see Greeley virgin forest map 1850, on page 14). Asher Durand demonstrated a strong affinity for painting undisturbed forest compositions and espoused a particularly strong ethos for representing nature truthfully, stating: "never let [the artist] profane [nature's] sacredness from a willful departure from the truth … For I maintain that all art is unworthy and vicious that is at variance with truth." In *Adirondack Mountains, N.Y.* (circa 1870), Durand reveals an extensive forested plain of seemingly undisturbed wilderness with a weathered hardwood and hemlock standing sentinel-like on a cliff in the right foreground. The closer hardwood has few large-diameter limbs in the crown and a relatively small leaf area to trunk volume, suggesting a very old tree. As depicted in Greeley's forest maps, the Adirondacks in northern New York were, indeed, one of the remnant strongholds of old growth forest in the Northeast in the late nineteenth century.

Durand also takes us into a forest interior in *Forest in the Morning Light* (1855). Bryophytes grow high on the trunks of hardwood trees, and moss covers the forest floor, which is strewn with multiple pieces of large downed

NEW YORK HISTORICAL SOCIETY. LUCE CENTER 1932.10

Asher Durand's *Adirondack Mountains, N.Y.,* circa 1870, depicts a large expanse of undisturbed forest.

Asher Durand's *Forest in the Morning Light* (1855) shows traits characteristic of old growth forest.

wood. Trees range in size and age from sapling to large veteran. The tree leaning to the right has a low taper (i.e., little difference in diameter) from the base of the trunk to the base of the crown. All of these attributes suggest old age and are characteristic of old growth forests in the Northeast. Interestingly, the species Durand chose to include in this particular composition—an apparent white oak (*Quercus alba*) leaning to the right in the foreground, an American beech (*Fagus grandifolia*) with smooth gray bark to the right of the white oak, and perhaps an eastern hemlock (*Tsuga canadensis*) or white pine (*Pinus strobus*) in the left foreground—were dominant species of the forests that greeted the first European settlers. Beech was the undisputed king of northern New England, northern New York, and northern Pennsylvania forests, with hemlock the second most important tree. White oak dominated the forests of the southern half of the region.

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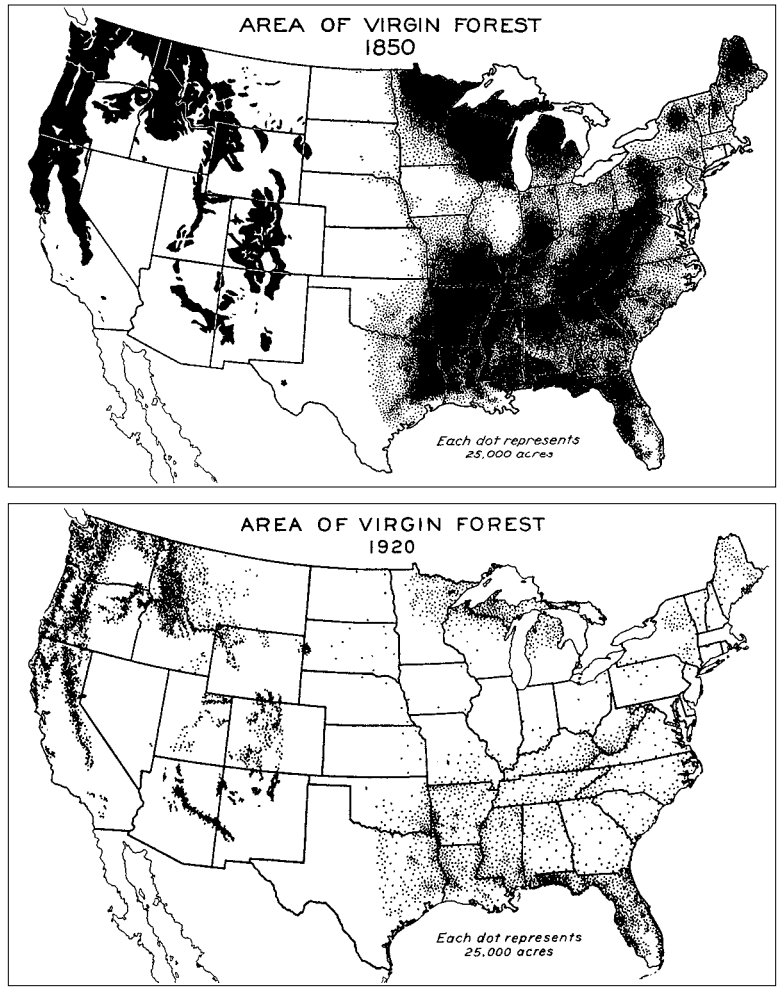
This 2015 photograph from Mount Holyoke showing the Connecticut River oxbow was made from approximately the same location that Thomas Cole painted *The Oxbow* in 1836.

The Great Rewilding

Fast forward 180 years from Cole's iconic *Oxbow* (see photo on previous page). The oxbow, clipped from the main channel in 1840 by flood waters, is now an oxbow lake. But what strikes the ecological eye is that history, rather astonishingly, appears to have moved from left to right since Cole's composition rather than vice-versa. Farm fields still dominate the foreground on the east side of the river, but trees have filled in much of the patchwork of fields on the west side of the river and behind the oxbow. The overall impression of the 2015 landscape is of one *less* heavily influenced by humans than Cole's.

It turns out that Cole was only partly right about the demise of the forest. Trees, especially hardwoods like oaks, chestnut (*Castanea dentata*), and red maple (*Acer rubrum*) are like phoenixes. After being felled, they sprout back rapidly from suppressed buds just below the cut. Other species such as yellow birch (*Betula alleghaniensis*), paper birch, and pin cherry (*Prunus pensylvanica*) germinate and grow rapidly from dormant seeds buried in the soil. Agricultural fields may temporarily suppress forest growth, but tree species with light, wind-blown seeds such as pines (*Pinus*), maples, and birches rapidly reclaim fields once they are no longer maintained. In the late nineteenth century—just as the Hudson River School began falling out of favor, the Industrial Revolution took hold, and agriculture shifted to the rich midwestern soils—vast areas once cleared for farmland were abandoned and began to revert back to forest. The result was a century-long and inadvertent recovery of the Eastern Deciduous Forest. In 2010, forest covered more of New England than it did in 1836, just as the photograph of the oxbow when compared to Cole's *Oxbow* suggests.

When not overexploited by humans, ecosystems are fundamentally "bottom up", meaning that resources such as light, soil nutrients, and water govern plant production, which grows herbivores, which in turn support predators. With the return of the northeastern forest and a ban on market hunting, deer and eventually moose recovered much of their former range. Beaver were reintroduced to several parts of the region in the early twentieth century and quickly spread, taking advantage of the reforested streams. Black bear began increasing



Rough estimate of "virgin" forest remaining in the United States in 1850 and 1920 (Greely 1925). Virgin forest is better described as "old growth" forest, meaning that it had never been cut by European settlers and had developed old forest characteristics, because many eastern forests were in fact disturbed by Native Americans prior to European settlement.

sharply in the second half of the twentieth century, expanding outward from nineteenth-century refugia and thriving on nuts and acorns in maturing beech and oak forests, as well as on readily available deer fawns. A new wild canid, the coyote, migrated into the region from the western plains, partially filling the vacated niche left by the extirpated wolf. In its eastward expansion, the coyote interbred with wolves in the eastern Canadian provinces, producing a larger version of its western progenitor and an animal capable of bringing down deer. More recently, the vanguards of extirpated large carnivores have begun passing through the Northeast. At least four wild gray wolves and four wild cougars have been confirmed in the region in the past two decades, and unconfirmed sightings of cougars have increased dramatically.

Of course, not everything has returned to a wilder condition today compared with 1836. Gone is an avian wonder that Cole may have seen from Mt Holyoke's summit: the passenger pigeon. This species once congregated in flocks in the millions, even billions, before being robbed of its forested habitat and hunted to extinction by the end of the nineteenth century. Wolverines still occurred in the Adirondacks as of 1842 and were reported to be in Pennsylvania, Maine, Vermont, and even in the Hoosac range of Massachusetts in the nineteenth century. These largest members of the weasel family remain far north of the United States today in upper Quebec and Newfoundland. Elk still roamed parts of New York and caribou inhabited northern Maine in the mid-nineteenth century, but both animals remain extirpated from those states today.

There are also far fewer old growth forests today than in 1836, even if the percentage of forest area today is higher. Forest greater than 200 years in age cover only about 0.4% of the northeastern United States, compared with the relatively sizeable tracts of old growth forest in the mid-nineteenth century (see 1850 Greeley map, on facing page). The long-lived beech, white oak, and hemlock that dominated early colonial forest composition, have been replaced by shorter-lived and earlier successional species such as red maple, black cherry (*Prunus serotina*), and birches in the younger forests that have grown back on abandoned farmland and cutover lands. The large pieces of downed wood and moss covered trees in Durand's *Forest in the Morning Light* are far less common in today's drier, second growth forests. Forest wildflowers are generally less abundant and diverse in second growth forests compared with old growth forests, and bird densities are also lower in the former compared to the latter.

Novel Threats

One of the factors that has slowed the recovery of beech and hemlock to their former positions of dominance in northeastern forests is the invasion of forest pests and pathogens from Eurasia. The exotic fungus *Nectria coccinea* var. *faginata,* introduced to Nova Scotia in the early 1900s, has subsequently spread throughout the Northeast, invading the bark and killing many mature beech trees. Hemlock woolly adelgid, an aphidlike insect introduced from Japan, reached New England in 1985 and has thinned the canopy and killed many hemlocks in the southern parts of the Northeast. But by far the most dramatic change to the modern forest resulting from an introduced forest pest is a tree portrayed in William Trost Richards's *October* (1863).

Richards was a member of a brief movement in the 1850s and 1860s that called themselves the Association for the Advancement of Truth in Art. Inspired by the British art critic John Ruskin, the American Pre-Raphaelites (as the group was later named) took the accurate portrayal of nature to a new level. In *October,* Richards's highly detailed rendering of an autumn forest scene enables us to identify the large tree on the right of the composition with diamond-shaped furrows on the trunk and linear sawtooth leaves with considerable confidence: an American chestnut (*Castanea dentata*). A chestnut this size hasn't been seen in the forests of the Northeast in perhaps 75 years. Forty years after Richards's painting, the Asian chestnut blight (*Cryphonectria parasitica*) arrived in New York City, and over the next several decades destroyed virtually every mature chestnut throughout its Appalachian

Because of the introduction of chestnut blight, northeastern forests no longer contain large specimens of American chestnut like the one seen on the right side in William Trost Richards's *October* (1863).

mountain range. Chestnuts today rarely grow above 15 centimeters (6 inches) in diameter, perhaps 1/5 to 1/6 the diameter of the tree in Richards's painting, before being killed by the blight and therefore almost never emerge into the forest canopy. Interestingly, the smaller tree to the left of the chestnut in the right foreground, flowering dogwood (*Benthamidia florida;* syn. *Cornus florida*), has also been struck by an exotic fungus, dogwood anthracnose (*Discula destructiva*), and has declined significantly in recent decades.

The Future Landscape: Stemming a Second Deforestation

Looking north from the summit of Mount Holyoke, past the farm fields that have succeeded to forest, an unmistakable threat to the forested landscape can be seen: the patchwork of residential and industrial development and roads fragmenting and perforating the forests and farm fields. As the forest grew back in the twentieth century after farm abandonment, human populations also surged. By 1975, the human juggernaut caught up to the regenerating forests, and the pendulum of 100 years of forest recovery began to swing back towards forest loss (see forest and population map). Forty years later, forest loss is in near free fall in New Hampshire and the southern New England states. More recently, Vermont began losing forest at an increasing rate. Only Maine has been able to sustain a balance between forest loss and forest recovery, although residential development is projected to increase significantly in the southern part of the state over the next two decades. This deforestation is much harder for trees to recover from than before. Paved roads and housing developments represent a "hard deforestation," in contrast to the "soft" deforestation of agricultural fields in the nineteenth century (Foster et al. 2010).

How will the northeastern landscape look in the next 50 to 100 years? The answer depends in large part on whether conservation groups, private landowners, public agencies, and other stakeholders are willing to work together to protect both forest and farmland. The news so far is promising. In the past 10 to 15 years, partnerships of conservation groups that transcend political boundaries have increased by a factor of six in New England and adjacent New York. This type of regional collaboration is at the heart of *The Wildlands and Woodlands Vision* created by 20 scientists and environmentalists across the region. The Vision calls for the permanent protection of 70% (30 million acres) of the New England region in forest over the next 50 years. Like the structure of an ecosystem, the *Wildlands and Woodlands Vision* is fundamentally a bottom up (grass roots) effort. It has to be: over 80% of New England's forestland is privately owned.

If he were alive today, Thomas Cole would be amazed to see more forest cover in New England than he saw in 1836. But he would once again recognize and lament the signs of deforestation. History has inadvertently given us a second chance to live in a forested New England, but there will be nothing inadvertent about the efforts needed to keep these forests standing.

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