

Joseph Ritchie

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Research Paper 2

Causes of Deforestation in the Hudson Valley and What Has Been Done To Reverse It

Long before commercial ships piled into its waters, and long before cities surrounded its shores, the Hudson River's incomparable natural character was recognized. When Henry Hudson sailed up in search of a new passageway to Asia in 1609 and discovered the river soon to bare his name, the Hudson Valley looked much different than it does today. Many things have changed in the Hudson Valley, including massive deforestation, the introduction of invasive species, and the burning of forest land to clear the way for agriculture. A dark reality was taking shape along the Hudson: the environmental impacts of 20th century industrialization. Ironically, it was the Hudson's attractive natural features that led to much of its degradation. Industries chose to locate along the river in order to take advantage of an abundant water supply, fast currents to power machinery, and an easy means of waste disposal.¹

When the first European settlers arrived in New York, they found a seemingly endless wilderness; an estimated 90 percent of the state was densely forested but the Hudson River Valley's landscape changed rapidly following Henry Hudson's discovery of the river in 1609. Soon, forests were cleared to make way for agriculture and towns and to fuel industries such as

¹ Open Space Institute, "Preserving the Legacy: Conservation in the Hudson River Valley." http://www.osiny.org/site/PageServer?pagename=Feature_Preserving_the_Legacy (accessed 11/22/09).

tanning, paper, and charcoal. The clearance of naturally occurring forests because of activity conducted by the people, such as burning trees in a forested area, is what is known as deforestation.²

Man-forced removal of trees without sufficient reforestation can result in damage to the habitat. Deforested regions typically incur significant adverse soil erosion and frequently degrade into inhospitable surroundings. Because of this, by the late 1800s, the amount of trees in the Hudson Valley, like much of the state, was fading. At times, logging upstate was so intense that it closed down shipping on the Hudson River because of the millions of logs floating downstream.³

Colonial agriculture and logging had already taken a considerable toll on the Hudson River Valley because of the mass land-clearing and deforestation. The industrial revolution quickened the pace and scale of resource consumption. Since colonial times, white pine forests had been cut to furnish a huge shipbuilding industry. Since the American Revolution, pine was cut for charcoal, which was burned in iron foundries, such as that at West Point. Hudson Valley woodlands were stripped for firewood that was burned to produce the steam that powered factories and steamboats. Hemlocks were stripped of bark to supply tanneries. Although tanning had been done since colonial times, tanneries increased their operations to serve growing demand for leather, with the result that whole hemlock forests in the Catskills were destroyed. The Pratt tannery, at Schohariekill, consumed 6000 cords of bark a year: 15 cords required the stripping of

² McCully, Betsey. "An Environmental History Perspective." <http://www.newyorknature.net/Hudson.html> (accessed 11/22/09).

³ Peteet, Dorthy. "Change in the Hudson River Valley Since 1609." February 2007. http://www.ecostudies.org/chp/Module5/5_3_Change_since_1609_student_reading.pdf (accessed 11/22/09).

75 trees.⁴

Great rafts of cut logs were ferried downriver to loading docks, such as the one at Albany, which was built with the sole purpose of holding logs. Robert Boyle, in his classic *The Hudson: A Natural and Unnatural History*, noted that as early as in 1825, Hudson River steamboats and New York Harbor steam ferries consumed 100,000 cords of wood per year. Logs were cut from the top of the Palisades and slid down to the river at what came to be called High Gutter Point.⁵

Blast furnaces are large devices used for smelting to produce industrial metals, mainly iron. In a blast furnace, fuel and ore are continuously supplied through the top of the furnace and air is blown into the bottom of the chamber. Chemical reactions take place throughout the furnace as the material moves downward. The chemical reactions that take place in the blast furnace due to the intense heating process can cause hazardous chemicals to be released into the soil near blast furnace industries. In 1827 the West Point Foundry in Cold Spring began operating a charcoal-fueled blast furnace bordering the foundry complex. Through the efforts of artisans and managers, the furnace successfully produced pig iron mainly for use at the West Point Foundry, but also provided pig iron to other iron industries in the Hudson River Valley during the 1830s. Despite their success in making a quality product, managers stopped operating the furnace by 1844 due to environmental pollution to surrounding forests due to harmful effects on the soil.⁶

Replacing ferries and boats as the primary form of transportation along the Hudson River came the Metro-North Railroad, which uses the railroad lines on both the western and eastern

⁴ Ibid.

⁵ Ibid.

⁶ Timms, Erin. "Industrial Archaeology Theses and Reports." 2005. <http://www.social.mtu.edu/gradthesesia.htm> (accessed 11/30/09).

portion of the river. The railroad tracks have local trails that range from Port Jervis, Spring Valley, Poughkeepsie, and Wassaic to New York City. In the construction of all the rail trails in the Hudson Valley, many trees were cut down, burned, and used for the tracks themselves. The construction of the railways in the Hudson Valley is a direct cause of deforestation. The crushed stone ballast used as foundation for the tracks of the railroad may have even disrupted the habitat for other trees in the area.⁷

Once access to the mines of Pennsylvania was secured via the D&H Canal, coal replaced wood as the favored fuel. Besides the local impact of coal mining, coal burning, as we know it today, contributes to acid rain, smog, and global warming. Acid rain causes the deaths of trees and is a leading cause of deforestation. With the discovery of oil in the mid-19th century, oil refineries and petrochemical industries used the Hudson and other waterways as convenient sewers for flushing toxic wastes. Mining and oil exploration is very costly to the environment because trees have to be cleared in order to make room for mining and oil exploration. Acid sludge is a byproduct of oil refining and causes soil erosion and settles into riverbed sediments. The flagrant pollution of the Hudson presaged the poisoning of the waters and soils through the 20th century, as more lethal chemicals were manufactured: pesticides like DDT, and PCBs, used in the manufacturing of silicone. GE was one of the worst polluters in discharging tons of PCBs into the Hudson from its plant at Fort Edward on the upper Hudson. GE had received the blessing of the federal government in 1930 to discharge the PCBs, which remain in the river sediments. In 1980, Congress passed the Superfund Act, which required industrial polluters to

⁷ Longworth, Jim. "Track Ballast." December 2004. http://www.absoluteastronomy.com/topics/Track_ballast (accessed 11/22/09).

clean up their act, including GE. But GE has dragged its feet, tying up cases in the courts to avoid compliance with the EPA order to clean up the Hudson.⁸

The overwhelming cause of deforestation is agriculture. Subsistence farming is responsible for 48% of deforestation. In the Hudson Valley, trees are cleared for the purpose of farming.⁹ The Hudson Valley produces a variety of field crops largely in support of its dairy industry. Corn, oats and wheat are widely grown and many apple orchards are located in the Hudson Valley. There are also farm wineries located in some parts of the Hudson Valley. When it comes to agriculture it is one of the leading causes of deforestation in the Hudson Valley area due to all the land clearing in order to grow crops.¹⁰

Although coal and oil continue to provide most of the northeast's energy, nuclear reactors currently generate additional electricity for the ever-growing population. In the 1960s, Con Ed built a nuclear reactor at Indian Point, just twenty-four miles north of New York, on the Hudson's east bank. The plant kills millions of fish by sucking them into their turbines and literally cooking them in heated discharge water. Hudson Riverkeeper, an environmental neighborhood watch program for anybody who wants to be take part and protect the community's right to clean water. Riverkeeper has kept up a constant legal battle with Con Ed over the Fishkill plant, and recently won a ruling to shut down the plant's cooling operations

⁸ McCully, Betsey. "An Enviromental History Perspective." <http://www.newyorknature.net/Hudson.html> (accessed 11/22/09).

⁹ "United Nations Framework Convention on Climate Change." January 2007. http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/pub_07_financial_flows.pdf (accessed 11/30/09).

¹⁰ "Farms and Orchards." April 2003. http://dir.hudsonvalleysojourner.com/Farms_038_Orchards/ (accessed 11/30/09).

during fish spawning season.¹¹

The Riverkeeper organization was founded in 1966 by a group of fishermen and residents of the state. Riverkeeper is an environmental non-profit dedicated to the protection of the Hudson River and its watersheds that provide New York City with its drinking water. In 1984, Robert F. Kennedy Jr. joined the Riverkeeper organization to accomplish a court-mandated 1,500 hours of community service. Kennedy teamed with Riverkeeper to sue polluters of the Hudson River. After his 1,500 hours were complete, the group hired Kennedy as its chief prosecuting attorney. Kennedy also founded and is the current chairman of the organization Waterkeeper Alliance, which connects and supports local Waterkeeper groups all along the Hudson River. Since 1987, Kennedy has served as a Clinical Professor of Environmental Law at Pace University and co-director of the Pace Environmental Litigation Clinic. The clinic allows second and third year law students to try cases against alleged Hudson River polluters. Kennedy also serves as a senior attorney for the Natural Resources Defense Council, a non-profit organization working to expand environmental laws and restrict land use.¹²

In 1966, folk singer Peter Seeger co-founded Hudson River Sloop Clearwater, an environmental education organization that promotes awareness of the river and its history. Clearwater has gained national recognition for its activism, including their role in forcing the clean-up of PCB contamination of the Hudson River caused by GE and other industrial manufacturing companies on the river's edge. GE's Hudson Falls and Fort Edward facilities discharged between 209,000 pounds and 1.3 million pounds of PCBs into the river from 1947 to 1977. Although industrial contaminants and pollution caused by its development still pollute the

¹¹ "Our Story: The Hudson Riverkeeper." <http://www.riverkeeper.org/about-us/our-story/> (accessed 11/30/09).

¹² "Robert F. Kennedy, Jr. Chief Prosecuting Attorney." <http://www.riverkeeper.org/about-us/our-team/robert-f-kennedy-jr/> (accessed 11/30/09).

Hudson, a myriad of environmental laws now protect the river. In 1976, the New York State Department of Environmental Conservation banned all fishing in the Upper Hudson due to health concerns because of PCBs. The United States Environmental Protection Agency declared a two hundred mile stretch of the river, from Hudson Falls to New York City, to be a site requiring cleanup in 1983. GE finally began cleaning up the PCBs in 2009.¹³

The Hudson River Valley is home to some of the country's wealthiest landowners, including the Rockefeller, Morgan, Harriman, and Perkin families. The powerful families set the stage for preservation to take place at an unprecedented scale. Owning vast amounts of land throughout the region, they had the power, money, and perhaps most importantly, the commitment to protect the environment of the Hudson River Valley. In part of their efforts, New York State established parks, preserves, and the nation's first greenbelt. Today, the descendants of these families continue to donate time, land and money to fill in the unprotected gaps across the region.¹⁴

Enhanced regulation and greater public awareness have made sizable stretches of the river clean enough for both humans and fish species. In many ways, both the Hudson River and its surrounding valley are cleaner and more protected today than they have been in centuries, but challenges remain. The story of the Hudson River, its flowing waters and fertile valley and the people who inhabit its environment is far from over. The forests are recovering, the fish are returning, and much of the land is now protected, but challenges remain. What lies next for the Hudson River Valley is yet to be determined, but is dictated by concerned individuals with an aim at protecting the valley and its inhabitants.

¹³ " History 1966 to the Present." January 2009.<http://www.clearwater.org/about/history/> (accessed 11/30/09).

¹⁴ Open Space Institute, "Preserving the Legacy: Conservation in the Hudson River Valley."
http://www.osiny.org/site/PageServer?pagename=Feature_Preserving_the_Legacy (accessed 11/22/09).

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