



n e w y o r k s t a t e
~ a r c h i v e s ~

A light gray map of New York State is centered on a darker gray background. The map shows the state's outline, including the Adirondack region and Long Island.

ENVIRONMENTAL AFFAIRS
In
NEW YORK STATE
An Historical Overview

By Brad Edmondson
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Environmental Affairs in New York State: An Historical Overview

by Brad Edmondson ⁱ
for the New York State Archives

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1. Introduction

Balancing human needs with the health of the natural environment may be the most pressing global concern of the twenty-first century. Yet the environment has been a mainstream political issue for less than 40 years. New York State's history underscores the youth and rapid growth of environmental affairs. This paper outlines some of the major events, leaders, laws, and groups that brought the environment from obscurity to prominence in New York. The paper is part of an effort to support those who identify and collect relevant documents concerning environmental affairs in the state. Its two goals are to organize the subject in the minds of its readers, and to provide clues and inspiration for environmental document-hunters.

The history of environmental affairs in New York is the story of how New Yorkers decided to use their natural resources, and how they still struggle to use soil, timber, water, air, and wildlife in ways that do not decrease their value. New York is a huge place for human settlement -- it is larger than Greece and more than half the size of the United Kingdom -- but European immigrants began spreading across the state only about 200 years ago. In that relatively brief time, New Yorkers have developed the state's 976 miles of ocean coastline and dug 524 miles of State-maintained canals. New Yorkers largely deforested their land within 100 years of establishing the state; today, forests once again cover the majority of the land, and the amount of forested land in New York is increasing. New York farms were mostly subsistence operations in 1800, but today they send \$2.9 billion a year in products to market and spread over 7.3 million acres.ⁱⁱ

Slightly less than half of New York's land is taken by metropolitan areas. But large rural tracts are still appropriated for urban needs as reservoirs, power plants, or dumps, often in the wake of bitter controversy. And perhaps the most valuable open spaces in New York are also reserved for city-dwellers: New York's 261,000 acres of state parks and recreation areas attract more than 64 million visitors and their spending money every year.ⁱⁱⁱ As the old saying goes, 100 tourists equal the income from one acre of potatoes, and the tourists are much easier picking.

Before 1870, most New Yorkers lived in rural areas. In that place and time, "nature" was not seen as a park. It was an overwhelming force sometimes viewed with awe, but most often with loathing. Early farm and village residents may have appreciated wild forests, clean air, and pure water, but their lives and property were regularly threatened by wild animals, extreme temperatures, drought, and floods. Absorbed in a daily struggle to make water, land, and timber yield essential food, shelter, and fuel, the majority of early New Yorkers could not have understood that nature would soon be viewed as a precious thing that needed protection.^{iv}

Appreciation of wilderness began in the cities, when men and women who were separated from the struggle with nature began to see it as something beautiful or sublime. New York City has been America's largest urban center since the 1790s, and its sophisticated residents led the nation's shift toward nature appreciation. The opening of the Erie Canal in 1825 made New York the economic capital of North America, and it

also eased the journey of New Yorkers to western wonders like Niagara Falls. A few decades later, railroads made it a simple matter to visit Lake George or climb the peaks of the Adirondacks. But early nature fans did little about the loggers, hunters, and farmers who were rapidly consuming the state's wild areas. Indeed, they often belonged to those groups themselves. George Bird Grinnell, a founder of the National Audubon Society, was the wealthy publisher of a hunting magazine based in New York City.^v

Scientists were the first to argue that people should protect natural resources out of self-interest. In 1864, George Perkins Marsh's *Man and Nature* introduced the idea that human activity can inflict permanent damage on a landscape. Five years earlier, Darwin's *On The Origin of Species* argued that nature is a constantly-changing system with an uncountable number of interacting parts, and that changing one part of nature might change it all. Marsh, Darwin, and other early ecological thinkers provided some of the intellectual fuel for political efforts to control timber-cutting, regulate game hunting, and protect watersheds. Political support also came from the growing ranks of wealthy camp owners, middle-class tourists, physicians, and others who valued the therapeutic aspects of wild nature. But the most powerful force for protection was the New York Chamber of Commerce, whose members feared the long-term economic consequences of rampant logging.

The campaign for forest protection bore fruit in the mid-1880s when the state legislature created the Forest Preserve and hired game wardens. It triumphed in 1894, when voters ratified the "forever wild" clause in the State Constitution. Over the next two decades, the Forest Preserve's defenders fought off repeated attempts to re-institute logging and building. Yet much of the land they fought to protect had already been cut over. Enormous fires caused by continued cut-and-run logging on private land ravaged the new park. Game wardens struggled to enforce the laws and were often frustrated. It took decades for deer, beaver, and other game animals to recover from near-extirmination.

The early years of the twentieth century were dominated by the "conservation" movement, which favored the scientific control of natural resources to maximize sustained yields. The movement was led by Theodore Roosevelt, who published an article on the birds of Franklin County at the age of 19^{vi}, and forester Gifford Pinchot, the son of a wealthy New York financier. Conservation sciences made rapid progress in the young State University of New York system, led by the College of Agriculture at Cornell University. The Roosevelt-Pinchot era also produced the first laws for the regulation of New York's water, timber, and wildlife. But conservation leaders did not halt the widespread destruction of forests by poor logging practices and fires, and they did not prevent the dumping of raw sewage into urban waterways. While conservationists opposed the rampant mining of natural resources, their main purpose was to promote the harvesting of nature.

In the 1920s, the drive to protect nature gained momentum when a huge wave of New Yorkers began touring the countryside in their automobiles. Outdoor recreation and the preservation of natural areas were always linked in the minds of people like Roger Tory Peterson, the world-famous birder who moved from Jamestown to New York City in his

teens and became a new member of the Bronx County Bird Club in the late 1920s.^{vii} In 1928, the five-year-old Adirondack Mountain Club endorsed a policy that combined advocacy in three areas: conservation, recreation, and education.^{viii} During the Great Depression, state and federal assistance programs accelerated the growth of state forests and parks, especially in central and western New York. In the 1940s and 1950s, the Adirondack Mountain Club and others scored several victories in the courts. Environmental activism grew slowly, however, and it was largely restricted to one branch of small, mostly male sporting clubs -- until the 1960s. Then, suddenly, everything changed.

America's mass acceptance of environmental ethics has been traced to three social shifts. First, the rapid development of nuclear weapons in the 1950s made it apparent that humans could destroy the planet; at the same time, contamination from radioactive fallout was detected around the globe. Second, advances in the natural sciences provided proof that a relatively new concept -- pollution -- could inflict long-term damage on natural systems. In 1962, the publication of Rachel Carson's *Silent Spring* in *The New Yorker* brought this message to the mainstream. Third, the Apollo space program yielded images of the planet that made Earth appear fragile, lovely, and small. After the first moon landing, novelist and physicist C.P. Snow wrote: "As a result of supreme technological skill and heroism, we are faced not with the infinite but with the immovable limits."^{ix}

Between 1968 and 1978, memberships on file at the Manhattan headquarters of The National Audubon Society increased from 88,000 to 388,000.^x Membership in the Adirondack Mountain Club tripled between 1965 and 1972.^{xi} And on Earth Day 1970, Governor Nelson Rockefeller signed legislation establishing the Department of Environmental Conservation, a powerful bureaucratic machine charged with coordinating and strengthening all aspect of natural resource protection and pollution control.

The ideas first advanced by Marsh and Darwin in the 1860s gained a sense of urgency in the 1960s, super-charging the environmental movement. According to historian Alfred W. Crosby, "the new environmentalists wanted to preserve as much of primordial nature as still existed because of its intrinsic value, an almost religious yearning, and to defend an allegedly damaged biosphere so that they human species might survive, a yearning thrumming with anxiety."^{xii}

Between 1970 and 2000, this new eco-centric philosophy made rapid inroads among the public and elected officials. A majority of Americans now say they worry "a great deal" about water, air, ocean, and soil pollution, according to the Gallup Organization. But most Americans also say they are "somewhat satisfied" with environmental protection measures,^{xiii} a reflection of the government's progress in this area. Meanwhile, science is accumulating more and more evidence that human activities are permanently changing nature on a global scale. The cycle is clear: scientists and naturalists sound alarms, activists take up causes, the public demands change, politicians reform laws, and the furor abates until a new alarm sounds.

Today, the focus of environmental affairs in New York is increasingly global and relentlessly local. As the home of more than 100 non-governmental organizations dedicated to environmental protection, including the United Nations, New York remains at the forefront of environmental thinking and action^{xiv} on global issues. Leading-edge New York activists are exploring the links between environmental damage and consumer spending, population growth, climate change, and poverty. As environmental thinking spreads throughout society, new areas of concern are emerging. A growing number of executives support sustainable or “green” business practices, for example. The sprawling growth of suburban communities is a major concern in Rochester, Long Island, and other areas. “Environmental justice” activists fight against the disproportionate effect of pollution on the poor. Those who are alarmed at the pervasive spread of environmental affairs have even formed groups to fight the pollution fighters.

But to the vast majority of New Yorkers, environmental issues are not global -- they are intensely local. Environmental affairs means the successful campaign to prevent construction of a nuclear power plant on Cayuga Lake; the clean-up of Love Canal and other toxic waste sites in Erie and Niagara Counties; and the struggle to prevent a regional dump from opening near the tiny Lewis County hamlet of Harrisville.

TABLE 1: Selected National and International Environmental Groups with Headquarters in New York State

Amanaka’ a Amazon Network, New York, NY
 American Society for the Protection of Nature in Israel, New York, NY
 American Nature Study Society, Homer NY
 Association of State Wetland Managers, Berne, NY
 Atlantic States Legal Foundation, Syracuse NY
 Camp Fire Club of America, Chappaqua, NY
 Center for Environmental Education, Valhalla, NY
 Center for Environmental Information, Rochester, NY
 Dragonfly Society of the Americas, Binghamton, NY
 Environmental Defense Fund, New York, NY
 Fund For Animals, New York, NY
 Girl Scouts of the USA, New York, NY
 Garden Club of America, New York, NY
 Great Lakes United, Buffalo NY
 Green Party USA, Blodgett Mills, NY
 INFORM Inc., New York, NY
 Institute of Ecosystem Studies, Millbrook, NY
 League of Women Voters Committee on the Environment, Chappaqua, NY
 Marine Environmental Research Institute, New York, NY
 National Audubon Society, New York, NY
 Natural Resources Defense Council, New York, NY
 Planned Parenthood Federation of America, New York, NY
 Population Communications International, New York, NY
 Property Rights Foundation of America, Stony Creek NY

Rainforest Alliance, New York, NY
Wildlife Conservation Society, Bronx, NY
World Environment Center, New York, NY
World Parks Endowment, New York, NY

Sources: *The Environment Encyclopedia and Directory*, Europa Publications Limited, London, 1994; National Wildlife Federation, *Conservation Directory, 45th Edition*, National Wildlife Federation, Vienna, Virginia, 2000.

As in 1900, environmental affairs in New York is mostly the story of well-educated city dwellers insisting on changes that have the greatest impact on rural residents. Like a century ago, the political support for environmental reform is based on popular interpretations of scientific research, interpretations that are sometimes incomplete or wrong. But unlike 1900, environmental organizations are now found in every corner of New York, and officials in the most rural townships are now required to consider the environmental impacts of their actions.

Every year, hundreds of New York organizations, from the World Environment Center (in Manhattan) to the Chautauqua County Environmental Management Council (in Jamestown) create boxes upon boxes of records. Every year, hundreds of state and local laws are passed on behalf of New York's environment, and each new law is preceded by a trail of documents. The following essay is intended to be a guide to the ideas that underlie New York's vast infrastructure for environmental protection. Think of it as a map for those who want to find their way through the wilderness of environmental records.

2. Before 1895: Discovering Nature

"In Europe people talk a great deal of the wilds of America, but the Americans themselves never think about them; they are insensible to the wonders of inanimate nature and they may be said not to perceive the mighty forests that surround them till they fall beneath the hatchet. Their eyes are fixed upon another sight, the . . . march across these wilds, draining swamps, turning the course of rivers, peopling solitudes, and subduing nature."

--Alexis DeTocqueville, *Democracy in America*, from a trip in 1831

"The lands of the State [of New York], now owned or hereafter acquired, constituting the Forest Preserve as now fixed by law, shall be forever kept as wild forest lands. They shall not be leased, sold, or exchanged, or be taken by any corporation, public or private, nor shall the timber thereon be sold, removed, or destroyed." -- New York State Constitution Article VII, Section 7, ratified in 1894

The earliest American settlers often spoke in fearful tones of the wild lands that surrounded them. William Bradford reported that he stepped off the Mayflower in 1627 to a “hideous and desolate wilderness.” For more than two centuries, his co-travelers in America regarded wild nature with revulsion, while they saw Western civilization as the world God intended. William Cooper, a settler in northern New York in the late 1700s, wrote that his “great primary object” was “to cause the Wilderness to bloom and fructify.” When nature was written about in favorable tones, the praise was almost always couched in terms of rural husbandry, not wilderness. Early landscape painters commonly showed farm scenes with forest edges in the background, as if nature had been pushed into submission by the righteous farmer.^{xv}

By the end of the Nineteenth Century, this attitude has been turned on its head. Loggers, hunters, and farmers began the century being portrayed as heroes in the battle against the dark wilderness; they ended it as “pirates of the forest”^{xvi} who plundered a defenseless Mother Nature. New York voters came to believe in protection so strongly that in 1894, they approved a new clause in the state Constitution designating hundreds of thousands of state-owned land “forever wild.”

Two movements were at the root of this reversal. The first was a broad shift in public attitudes. Early in the century, a few artists and writers in Europe and New York City began portraying wilderness as a treasure unique to America. Near mid-century, urban design experts and physicians in New York and Boston began prescribing fresh air, sunshine, and the solitude of wide-open spaces for illnesses that ranged from consumption to insanity. Sanitariums were built in pastoral settings, including a vast mental hospital on Seneca Lake and a tuberculosis treatment center in Saranac Lake. Belief in the positive benefits of wild landscapes had become mainstream by 1883, when Niagara Falls became America’s second state park, and was confirmed in 1885, when the state created its Forest Preserve. During the latter part of the century, naturalists and moral philosophers even began arguing that mankind had an obligation to treat wild birds and animals in a humane manner -- and that nature had a right to exist that was separate from mankind.

The second movement was based in science and economics. New York’s virgin forests were cut down rapidly and brutally, with severe side effects. In the 1860s, so much of the state had been poorly logged that erosion was pouring silt into the Mohawk and Hudson Rivers, threatening a transportation network that was vital to New York City. In 1864, George Perkins Marsh gave voice to the growing concern. In his book *Man and Nature*, Marsh argued that many ancient civilizations had failed because they stripped the earth bare with little regard for the future^{xvii}. The book became a central rallying point for those who believed that uncontrolled logging would ruin the state. Severe fires in the logged-over land, many caused by cinders from passing trains, deepened the sense of alarm. In the end, the successful campaign for the Forest Preserve depended on a rare alliance between nature-lovers, physicians, and the Chamber of Commerce.

From Hell to Heaven

European intellectuals who visited the new United States sometimes echoed the early American settlers' disdain for wild lands. But other visitors who followed the Romantic tradition were entranced by the vast empty spaces of the New World. Rene de Chateaubriand, who spent part of the winter of 1791-2 in northern New York, wrote that the absence of roads, towns, laws, and kings filled him with "a sort of delirium . . . in this deserted region the soul delights to bury and lose itself amidst boundless forests."^{xviii}

Upper-class New Yorkers were the first to see Chateaubriand's point of view. In 1830, Manhattan and Brooklyn had a combined population nearing 300,000. During that decade, the area around New York Harbor surpassed Mexico City to become the largest and wealthiest urban center in the New World.^{xix} Sheltered from the wild in their offices and drawing rooms, the city's elite began seeking enlightenment in the Romantic manner. Charles Fenno Hoffman, editor of *American Monthly Magazine*, found a "singular joyousness in a wilderness" and added, "I have felt among some scenes a kind of selfish pleasure, a wild delight, that the spot so lovely and so lonely. . . bloomed alone for me." In 1836, Hoffman published "Wild Scenes Near Home: or Hints for a Summer Tourist," essentially the first travel article about the Adirondacks.^{xx}

Many reporters followed Hoffman into regions of the state that were still beyond the reach of all but the most determined traveler, and the reading public developed an appetite for tales of wilderness adventure. In 1849, New York *Tribune* reporter Joel T. Headley announced that the great woods were "better for me than the thronged city, aye, better for soul and body both." He promised that anyone with "a love for the wild, and free" could enjoy an Adirondack vacation "and come back to civilized life a healthier and better man."^{xxi}

As the city's population exploded in the 1830s, the quality of its air and water deteriorated. A wave of immigrants from Ireland and Germany quickly overwhelmed low-income neighborhoods near the mills and wharves. In 1842, a landmark public health report by a local physician, John H. Griscom, cited tenements where 50 people shared a single privy, and basement apartments that were "living graves for human beings."^{xxii} Conditions in upper-class neighborhoods were not as bad, however, and decision-makers ignored the problem until a cholera epidemic seized the city in the summer of 1849. Over 5,000 died in Manhattan. Many of the wealthy fled for the fresh air and clean water of surrounding countryside. It is likely that many of them waited out the plague while reading a wilderness novel by James Fenimore Cooper.

Between 1823 and 1841, starting with *The Pioneers* and continuing with the series *Leatherstocking Tales*, Cooper wrote searchingly about the wilds of New York and the men who lived in them. Cooper's hero, Natty Bumppo, was a mouthpiece for the Romantic belief in the sanctity of the wild. But Bumppo went further, also saying that the woods bred honest men while city-dwellers were prone to decadence. Bumppo's speeches made Cooper into a national literary hero. But later interpreters have pointed out the author's personal belief that civilization was inevitable and the loss of wilderness a tragic

necessity. Cooper saw the transition from wilderness to civilization as the conflict of two moral goods, with civilization prevailing.^{xxiii}

Painters, like popular writers, had a great influence on popular attitudes early in the Nineteenth century. Before photography was widely available, the most prominent American artists put their newly-completed canvases on public display in New York, Boston, and Philadelphia, often stimulating intense debate. A particularly influential movement in landscape painting began in 1825, when an unsuccessful Ohio portrait painter named Thomas Cole began hiking into the Catskills with sketchbook in hand. Cole continued producing increasingly popular wilderness scenes, and the Hudson River School he founded grew in importance after his death in 1848.

Cole's canvases represented a basic change in attitude. He portrayed wild land that was under assault from settlers, and in the writing that accompanied his work he bemoaned the vanishing wilderness. One of his students, Frederick Church, eventually produced canvases that showed no trace of human activity whatsoever. Another student, Ashur B. Durand, wrote to his colleagues in 1855 that they should not go abroad, but paint America first: the "untrodden wilds, yet spared from the pollutions of civilization, afford a guarantee for a reputation of originality that you may elsewhere long seek and find not."^{xxiv}

The belief that pastoral settings were needed for health and well-being became public policy in 1858, when 840 acres of pig pens and sheep pastures were converted into a park for New York City. After years of delay and political log-rolling, the design contract for Central Park was awarded to Frederick Law Olmsted and Calvert Vaux. Central Park was a departure from most urban parks of the day, which were organized around marching grounds, playing fields, or race tracks. In contrast, Olmsted and Vaux wanted to give rich and poor a respite from the frantic, filthy city. They produced a natural-seeming landscape of curving drives and meandering paths. Visitors were presented with a series of artfully arranged pastoral landscapes that encouraged them to contemplate nature.

Olmsted was also among the first Americans to call for the preservation of wild land for its aesthetic qualities. In 1863, he wrote a report for the California legislature on the uses of Yosemite Valley, which would become the nation's first state park a year later. Once again, he argued for the therapeutic benefits of wilderness: "The enjoyment of scenery employs the mind without fatigue and yet exercises it; tranquilizes it and yet enlivens it; and thus, through the influence of the mind over the body, gives the effect of refreshing rest and reinvigoration of the whole system."^{xxv}

Olmsted's recommendation to leave Yosemite alone was well ahead of its time. He was ignored by the legislators, who soon allowed sheep to gnaw the Valley's pristine grasses. Yet his words had a lasting effect on those who heard them, and the influential designer continued to advance his point of view. He was a leader in the campaign to protect the Adirondacks. He was also instrumental in the creation of New York's first state

reservation at Niagara Falls, a public purchase made to save the falls from private developers.^{xxvi}

Other prominent Americans also spoke in praise of untouched nature. In 1858, Ralph Waldo Emerson's poem "The Adirondacks" memorialized his trip to the Philosophers' Camp, a getaway for wealthy and prominent men established by William J. Stillman at Follensbee Pond. In 1857, Paul Smith settled in the area that now bears his name and began building the hotel empire that brought thousands more into the northern woods. Throughout the 1860s and 1870s, rail lines extended further into previously inaccessible areas. In 1869, a tourism craze was triggered by the publication of the Rev. William H. Murray's *Adventures in the Wilderness*. And in 1871, a Catskill farmer named John Burroughs published his first essay. Over the next 50 years, Burroughs and his Western counterpart, John Muir, would become celebrity spokesmen for the sanctity of nature^{xxvii}.

Burroughs became well-known for his artfully written descriptions of the birds, insects and flora near his Delaware County farm, and from a nearby cabin he named Slabsides. He entertained hundreds of prominent visitors at the farm, traveled the country, and even took camping trips with industrialists like Thomas Edison, Harvey Firestone, and Henry Ford. Yet his writing also contained pleas for nature-worship that became more radical as his popularity increased. In 1920, a year before his death, he wrote: "When we call the power back of all 'God,' it smells of creeds and systems of superstition, intolerance, persecution; but when we call it Nature, it smells of spring and summer, of green fields and blooming groves, of birds and flowers and sky and stars."^{xxviii}

New Yorkers were also in the forefront of the movement to extend some legal protection to animals. In 1866, Henry Bergh organized the American Society for the Prevention of Cruelty to Animals (ASPCA) and drafted a "Declaration of the Rights of Animals" to support the cause. Bergh, a wealthy former diplomat, wrote and pushed a law through the New York legislature that forbade all cruelty to animals, domestic and wild. He also enlisted Henry Ward Beecher, the most prominent clergyman of the day, to endorse his mission, which Beecher defined as advancement of "the rights of animals."^{xxix}

While the Humane movement did not have any explicit connection to environmental affairs, it was still an important development. As historian Roderick Nash notes, humane activists like Bergh "deserve credit for making the first stumbling steps away from a definition of moral community that began and ended with human beings."^{xxx}

From Cholera To Clean Water

Industrial capitalism presented New Yorkers with a paradox: while it brought economic prosperity that improved their lives, it pushed them farther away from silent forests, clear streams, and other pleasures of the natural world. Also, the explosive growth of factories meant equally rapid growth in low-wage housing nearby. This concentrated age-old problems of waste and disease into urban areas, where weak local governments were reluctant to confront them. In the mid 1850s, for example, Manhattan's Common Council passed a law requiring that all residences be connected to sewer lines. Several years later, only about one-quarter of the city's paved streets had sewers. Two-thirds of New Yorkers

still used privies in 1857, and most of the poor still relied on public wells that were frequently contaminated. Cholera and typhus epidemics struck again in 1852 and threatened the city regularly. Between 1850 and 1860, the survival rate for children under the age of five in the city was less than 50 percent, a figure equal to the worst slums of England.^{xxxix}

Physicians could do little about urban epidemics until a dramatic victory in New York demonstrated the connection between health and sanitation. In 1892, another outbreak of cholera that had already devastated Europe faced the city. Reacting quickly, Common Council established a Division of Pathology, Bacteriology, and Disinfection. The new department was directed by Dr. Hermann Biggs, a native New Yorker raised in Ithaca and educated Cornell. Biggs promoted the view of German bacteriologist Robert Koch that communicable diseases could be prevented by eliminating germs. He dispatched teams that scrubbed the homes of cholera patients and treated or burned their clothes and bedding. His staff also flushed and disinfected 39,000 tenements. When the epidemic eased, only nine had died in Manhattan. The triumph began an era of municipal leadership in preventative medicine, including the first real efforts to protect the quality of urban air and water.^{xxxix}

Outbreaks of cholera and other diseases also drove the development of municipal water and sewer systems in rapidly-growing upstate cities. These were typically expensive and difficult undertakings. In Rochester, for example, a 16-mile aqueduct from Hemlock Lake was authorized in 1852, in the wake of a severe epidemic. The system did not begin operating until 1876, however, and health concerns continued even after the cleaner water came on line. Eventually the city bought and condemned the entire shorelines of Hemlock and neighboring Canadice, the two westernmost Finger Lakes, to reduce contaminants in the water. Hotels, cottages, and farmsteads were purchased and razed beginning in 1895, and the lakes have been off-limits to all but a few recreational uses since then.^{xxxix}

In New York, Hermann Biggs moved on to more successes against diphtheria and typhoid. He also made dramatic improvements in deaths from tuberculosis, “the great white plague” that had steadily killed more than 6,000 Manhattan residents a year.^{xxxix} Because tuberculosis was a steady killer, it did not get as much attention as epidemic diseases. Yet its high toll meant that thousands of families, rich and poor, were caring for loved ones with consumption.

Desperate for anything that would help, some TB patients responded to the call originally issued in Reverend Murray’s 1869 best-seller on the Adirondacks: “I predict that the wilderness will be more and more frequented by invalids, as accommodations are provided for their reception and comfort, and that the region will become the resort for thousands each year seeking restoration to health.”^{xxxix}

One of these invalid travelers was Dr. Edward Livingston Trudeau, a young Manhattan doctor who was near death from tuberculosis. In the summer of 1873, Trudeau was carried into Paul Smith’s hotel, and the man who carried him remarked that he weighed

“no more than a dried lambskin.” Three months later, he returned to New York much improved. The following year, he moved his family to the Adirondacks permanently and settled in Saranac Lake, a cluster of 50 crude log and wood homes at an elevation of 1,500 feet.

Like Biggs, Trudeau was intrigued by the ideas of Robert Koch. He also followed the work of Hermann Brehmer, the first physician to treat tuberculosis in a sanitarium that emphasized rest, fresh air, and the regulation of the patient’s life and habits. Trudeau duplicated Koch’s experiments in a crude laboratory, and in 1894 he established a one-room sanitarium in Saranac Lake. Trudeau’s results were much better than those achieved by doctors in the city. Patients began to pour in, and wealthy summer residents organized fairs to support them. Within a decade, the village of Saranac Lake had been reborn as a sanitarium for consumptives who came to be cured in the cold, dry air of the mountains.

Saranac Lake was a late example of a statewide trend to treat serious chronic illness by placing the afflicted in pastoral settings. In 1842, the New York State Lunatic Asylum in Utica opened with landscaped grounds in a rural area west of Utica. In 1853, the nation’s first asylum for the cure of alcoholism opened on a bluff overlooking the Chenango and Susquehanna Rivers, near Binghamton. And beginning in 1865, the Willard State Hospital operated as a planned rural community on the east shore of Seneca Lake. It eventually became home to about 3000 people, 2000 of whom were incurably insane.

Patients at Willard were soothed by the beautiful Finger Lakes farm country that surrounded them. “The proximity of the lake, with its bright sparkling water...exercises a beneficial and tranquilizing influence upon the disturbed and excited people whose home is, and for their lives shall be, this Willard asylum, on the banks of the sylvan lake,” wrote superintendent John Chapin in 1871.^{xxxvi}

The opinions of physicians like Trudeau and Chapin helped solidify the public’s belief that human health was enhanced by clean water and fresh air, and that mental health was aided by access to rural tranquillity. This belief, which was especially strong in urban areas, fueled the drive to protect open lands across the state. It was first expressed as public policy in the Adirondacks.^{xxxvii}

Fate of the Forests

The first real victory for the environmental movement in New York was hard-fought, and the environmentalists won mainly because of support from business leaders. It was a legislative victory that protected large areas from logging and development, but a partial one: nine more years passed before the law was placed above politics and enforced, and many of the protected lands had already been logged. Yet the creation of the State Forest Preserve was significant in several ways. It was the first time several diverse groups came together to pass environmental legislation at the state level. It was one of the first times that state law-makers were persuaded by the opinions of naturalists and scientists. Most significant, it established the precedent that protecting water, soil, and timber resources were public goals that could override private property rights.

In the 1870s, old-growth timber lands owned by New York State were being sold to loggers for 70 cents an acre, and the state paid a bounty to hunters who brought in the skulls of wolves and panthers. Yet there were signs that these policies had gone on too long. Commercial-grade white pine, the most prized of lumber woods, was nearly gone by 1870. Spruce was being cut rapidly, and the bark of old-growth hemlock trees was being stripped for use in tanning factories, causing the deaths of the trees. In the eastern Adirondacks, the voracious need of iron smelters for fuel led to ruinous clear-cutting. As the paper industry gradually shifted its raw material from rags to wood pulp, more land was clear-cut. The state led the nation in the production of lumber in 1850, but over-cutting and fires caused it to drop to fourth place in 1880 and seventeenth place by 1900.^{xxxviii}

The first call to preserve the north woods came from Samuel Hammond, an Albany lawyer whose annual camping trips into the Adirondacks began in the 1840s. In 1857, decrying the “greed for progress” that measured all things in terms of economic value, Hammond said that he would “mark out a circle of a hundred miles in diameter, and throw around it the protecting aegis of the constitution.” The land, he said, would be best kept as “a forest forever.”^{xxxix}

Hammond’s view was typical of urban visitors to the north woods who expected pristine wilderness but found something very different. Seven years later, the call for some kind of regulation of Adirondack lands came from the heart of the Manhattan establishment. An editorial in the August 9, 1864 *New York Times* commented on the planned rail link from Saratoga to North Creek by saying, “the Adirondack region will become a suburb of New York. The furnaces of our capitalists will line its valleys and create new fortunes to swell the aggregate of our wealth, while the hunting lodges of our citizens will adorn its more remote mountain sides and the wooded islands of its delightful lakes. It will become, to our whole community, on an ample scale, what Central Park is on a limited one...” The *Times* continued by exhorting New Yorkers to “form combinations, and seizing upon the choicest of the Adirondack Mountains, before they are despoiled of their forests, make of them grand parks, owned in common...”^{xl}

The *Times* editorial had a significant effect, and the public started to talk about a park. Yet the *Times* had endorsed the development of the Adirondacks as a multi-use region, not as a preserve marked “forever wild” in the state constitution. The journey to “forever wild” took thirty years, with many twists and strange turns along the way.

When the editorial ran, the only state agency dealing with natural resources was the New York State Land Commission, which had been established in 1779 to sell off excess property. The state’s first purchase of land did not happen until 1866, when it bought 700 acres of timber in Clinton County to ensure a supply of wood for the prison system. Land was added to the state’s holdings regularly, however, when it was reclaimed because of unpaid taxes. Most of the tax-delinquent land had been abandoned after logging for choice species such as white pine and spruce. Often the “cut-over” state lands retained a

lot of timber, and hunters and trappers roamed freely between public and private land. As the years went by and logging accelerated, more lands were left to the state.

Tourism to the north woods increased sharply in the 1860s and 1870s, as the editorial had predicted, and sections of the mountains became pleasure grounds for the gentry. Typical of these visitors were the Roosevelts, who first made the trip from their Long Island mansion to Paul Smith's Hotel in 1871. In his journal of that summer, 12-year-old Theodore Roosevelt wrote that he fell asleep while his father read aloud from *The Last of the Mohicans* by the light of a campfire.^{xli}

In the spirit of excess that was the Gilded Age, wealthy summer visitors demanded more and more from their Adirondack properties. They were served by William West Durant, son of a wealthy Adirondack landowner and railroad builder, who created a new architectural style. In 1876, Durant built the first "great camp" at Pine Knot, beginning a style of grand residences made of rustic materials like whole logs and native stone. Year-round residents were often employed as laborers and guides, thereby fueling the mythology of Adirondack craft-makers and woodsmen. The locals also worked in great inns like the 1882 Prospect House at Blue Mountain Lake, the first hotel in the world to provide electric lights in every room.^{xlii}

The north woods of New York were being used more extensively by many different groups, and concerns grew that ordinary citizens were losing a birthright. These concerns sharpened when consortiums of wealthy men began buying huge tracts of scenic land. In 1876, the Adirondack Club purchased several mountains, lakes, and valleys in the vicinity of Mount Marcy. Over the next two decades, other large purchases by groups like the Adirondack Mountain Reserve and the Adirondack League Club raised the prospect that wilderness recreation might soon become a pastime only for the rich.

Also in the 1870s, mainstream New Yorkers noticed that unregulated private land uses could create significant public nuisances. In 1872 and other years, cinders from passing railroads ignited the accumulated brush from recently logged lands, causing huge fires. White-tailed deer, bear, and beaver were being exterminated in all but the most remote areas. Also, a drought cycle that peaked in 1883 created the popular impression that fires, erosion, and logging were drying up the land, just as George Perkins Marsh had warned in *Man And Nature*. Marsh made a crucial connection when he argued that a society's economic growth depended on the protection of its wild land, and his book became a staple for preservationists.^{xliii}

One of the most persuasive voices for protection was Verplanck Colvin, a flamboyant surveyor who produced the first maps and detailed descriptions of various Adirondack peaks. Borrowing from Marsh, Colvin liked to refer to the north woods as a "hanging sponge." In an 1872 speech to the Albany Institute, Colvin said, "It has been proposed that the state reserve this region as a Wilderness Park for sportsmen, but that it a slight matter in comparison with the reservation of it as a timber preserve, and as the grand reservoir region of the cities of the valley of the Hudson."

The water argument was to prove decisive to the parks' creation. In the mid-Nineteenth Century, freight traffic through the Erie Canal may have been the most important reason for New York State's dominance of the North American economy. Without enough fresh water to float barges through the canal and Hudson, New York City would falter -- as it did, briefly, when water levels dropped dangerously in 1883. Even more important was ensuring clean drinking water for the expanding metropolis. Manhattan had drawn water from the Croton River through aqueducts since 1866 and had long-range plans to look even further upstate. Yet neighboring cities had to depend on increasingly uncertain sources. By the end of the century, Brooklyn was running out of fresh water. Access to Manhattan's aqueduct was one of the factors that led the five boroughs to merge, creating the present boundaries of New York City in 1896.^{xliv}

Thanks to the water issue, the chorus of nature tourists, naturalists, and physicians who supported the Adirondack Park was joined by a powerful fourth presence: the state Chamber of Commerce. In 1883, the Chamber's President was Morris Jesup, an ardent naturalist and social reformer who was also the President of the American Museum of Natural History. At a meeting late in the year, Jesup proposed that the state use its power of eminent domain to set aside "perhaps 4,000,000 acres . . . for all time as a great forest preserve."^{xlv} Money talks. A law establishing the State Forest Preserve was passed within 18 months.

The Forest Preserved

As supplies of wood, wildlife, and water ran low, the state began investigating what it would take to sustain them. In 1862, the Morrill Act enabled states to sell public lands to finance land-grant universities, which were to teach agriculture and the mechanical arts. Cornell University was established as New York's land-grant college in 1865, and it quickly became a national center for the study of forestry and the natural sciences. In 1868, the state established a Fisheries Commission to study the impact of logging on fish and water supplies. And in 1872, the state created a Commission of State Parks and asked its members to evaluate the idea of a large public park in the north woods.

One of the Commissioners was Verplanck Colvin. Another was Franklin B. Hough of Lowville, the first native-born American forester. Hough was a renaissance man -- a country doctor, historian, and naturalist who also directed the state census in 1865 and the federal census in 1870. Hough's study of lumber statistics convinced him that the state faced disaster, and he became interested in the scientific work of foresters in Europe. In 1873, the Commission's report combined Colvin's prose with the ideas of Marsh and Hough. They recommended a park that would be managed not as wilderness but as a working forest, with controlled logging and replanting. Although the report was initially ignored by the legislature, Colvin took its conclusions to various groups and relentlessly lobbied the public for support.

Meanwhile, Hough patiently worked from the inside. He sought state protection of forests at the meeting of the American Association for the Advancement of Science in 1873, and the AAAS responded by appointing him chair of a committee for forest protection. Three years later, Hough was appointed the first Forestry Agent of the US

Department of Agriculture. He completed an influential *Report Upon Forestry* in 1877 and published the first guide for American landowners, *The Elements of Forestry*, in 1885.^{xlvi}

Slowly the tide began to turn toward protection. After a decade of debate and continued logging, the State Legislature prohibited the further sale of state lands in ten Adirondack counties in 1883. Also in that year, Governor Grover Cleveland and the Legislature established the Niagara Reservation. The land around Niagara Falls was purchased by the state and reserved from private development in 1885, creating New York's first state park.

Early in 1884, after a vigorous campaign by Morris Jesup and the Chamber of Commerce, the State Legislature established a commission to "investigate and report on a system of forest preservation." The head of the commission was Charles Sargent, a Harvard professor and early advocate of scientific forestry. Sargent was doubtful that the state could manage the north woods well, and favored a policy of preservation while the forests recovered. His Commission proposed a law creating a forest preserve in 1885.

By this time, the press was regularly publishing accounts of a landscape being utterly destroyed by relentless logging. Two engravings published in *Harper's Weekly* on December 6, 1884 were typical: one showed a rushing mountain stream protected by towering trees and captioned, "A Feeder of the Hudson -- As it Was." Next to it was a dry streambed straddling slopes of charred stumps and captioned, "A Feeder of the Hudson - As It Is." Accompanying the illustrations was an article by Sargent warning that continued logging would reduce the Adirondacks "to the condition of a desert."^{xlvii} Opposition to the park was strong among upstate loggers and farmers. Grover Cleveland also opposed the law, claiming that the land would revert to the state anyway after it was logged. But scientific, social welfare, and business interests were allied, and New York City was solidly in favor of the bill.

On May 15, 1885, the Adirondack And Catskill Forest Preserves were signed into law by Governor David B. Hill. The legislation provided for a three-member Forest Commission, hired wardens, required railroads to take actions to prevent fires, and stipulated that the state would pay the taxes on Forest Preserve lands that were due to local governments. Following Sargent's recommendation, the law also said that "All the lands now owned or which may hereafter be acquired by the State of New York . . . shall be forever kept as wild forest lands. They shall not be sold, nor shall they be leased or taken by any person or corporation, public or private."

But the law proved hollow. Logging continued, wardens were routinely ignored, and private clubs continued to buy land at inflated prices. Forest Commissioner Theodore Basselin, a Lewis County lumber baron, even used his position to exclude lands he owned from the park, creating a series of scandals that seemingly confirmed Sargent's fears.

Even an important environmental advance sometimes happens for mercenary reasons, and this was the case in the Catskill Forest. The Sargent Commission's 57-page report dismissed the entire region in a single paragraph and recommended against adding it to the Preserve. But Cornelius Hardenburgh, an assemblyman from Ulster County, deftly put about 34,000 county-owned acres in his district into the package just before Governor Hill signed the bill. Hardenburgh was not a conservationist, but he was an ardent opponent of taxes, and Ulster County had owed \$40,000 in taxes to the state for those acres. His move wiped out the debt, created a perpetual revenue source for Ulster County, and -- as an afterthought -- began a park that now encompasses more than 1,100 square miles.^{xlviii}

The decree said that the new Forest Preserve was "wild land," but it took a decade for cultural and political changes to catch up to the law. The new Adirondack Preserve was 681,374 acres widely scattered over eleven counties, and many of those acres had already been logged. Private lands in the region were unaffected by the law, and logging there reached a peak between 1890 and 1910. The new frenzy for logging was due to a technological innovation: the substitution of wood pulp for rags in paper-making. Almost any kind of tree could make pulp, so lands that had recently been harvested for hardwood were logged again for spruce and other species, often leaving little behind. Timber corporations and wealthy sportsmen continued to consolidate their holdings, so that more and more land was owned by fewer and fewer people. And the railroads were pushing further and further into the forest, opening the most remote areas to development. It became clear that the Forest Preserve law had not saved the Adirondacks.^{xlix}

In Washington, important moves were being made toward large-scale public ownership. Congress empowered the President to establish forest preserves in public lands in 1891, and Benjamin Harrison immediately set aside 13 million acres of public land in the West. Slowly, New York began putting teeth into the Preserve law. The legislature appropriated \$25,000 for land acquisition in 1890, and Governor Hill directed the Forest Commission to recommend the boundaries of an Adirondack wilderness park. Two years later, Gov. Roswell P. Flower signed the Adirondack Park Enabling Act, placing 2.8 million acres within an imaginary "blue line," of which 551,000 acres were owned by the state and "forever reserved . . . for the free use of all the people."¹

In the next legislative session, a law was passed that allowed the state to sell lumber from its land, and legislators were excited by this long-term revenue source. In 1894, the state sold timber rights to 17,500 acres of spruce on public land, netting about \$53,000. But loggers on state land were often sloppy and destructive, and the "cutting law" was unpopular with the influential members of private hunting clubs. In 1893, the first commissioner of the USDA Forestry Division, Bernard Fernow, charged the Forest Commission with incompetence in managing its land. That summer, smoke from forest fires in the Adirondacks hung in a haze over the Hudson Valley.

In May 1894, when a convention was called in Albany to revise the state constitution, the New York Board of Trade and Transportation took action. They arranged for a delegate,

David McClure of New York City, to introduce an amendment on July 31 that would prohibit logging on state lands. After holding hearings in August where strong support emerged for the amendment, McClure moved it on September 8 and the Convention approved it unanimously. In November, voters ratified the new constitution with a 56 percent majority.

Article VII, Section 7 read, “The lands of the State, now owned or hereafter acquired, constituting the Forest Preserve as now fixed by law, shall be forever kept as wild forest lands. They shall not be leased, sold, or exchanged, or be taken by any corporation, public or private, nor shall the timber thereon be sold, removed, or destroyed.”^{li} The strict final clause prohibited not only logging, but also the removal of dead timber or the creation of dams that flooded Preserve land. But it did not say anything about the use of privately-owned lands within the Blue Line. The state would not tackle that piece of unfinished business until 1973.

Conclusion

As the nineteenth century ended, most New Yorkers still saw nature as raw material from which money could be made. The connection between sanitation and public health was a relatively new idea: it would be more than 30 years before New York City built its first sewage treatment plant. Yet two influential schools of thought were moving toward an ethic of land protection. The first was a philosophy that described nature in therapeutic or moral terms. In the Adirondacks, the Vanderbilts and Whitneys escaped the stress and grime of cities in their great camps. They were joined by naturalists like John Burroughs and doctors like Edward Livingston Trudeau, who often assisted the wealthy in their efforts to protect wild land by fencing it off.

Other elite hideaways linked nature-worship with other progressive ideas like feminism, natural health, and free thinking. At Putnam Camp in Keene Valley, founded by the philosopher William James, eminent guests like Sigmund Freud were required to chop wood or carry water as well as participate in salon discussions.^{lii} On the shores of Seneca Lake in Central New York, seven prominent women from Geneva and Seneca Falls established a camp called Fossenvue in 1875 and maintained it until 1901. Women came to Fossenvue to celebrate nature, but also to wear loose-fitting clothes, swim, play tennis, and discuss philosophy, all in the company of men. These were radical notions.^{liii}

The second view of nature was rooted in the scientific method. Medical researchers recognized that pure air and water could slow or halt the spread of infectious diseases, and their successes began the urban sanitation movement. Scientific foresters did not object to the extraction of resources from land, but sought to develop methods that would allow logging, mining, and hunting to continue at sustained levels indefinitely. Within the scientific umbrella was the emerging field of ecology, which attempted to understand nature as a system and sought ways to keep the system healthy.

For most of the Twentieth Century, the moral and ecological views of nature would be overshadowed by the sanitation movement and the sustained yield philosophy of “conservation.” And for the next several decades, the conservation view would be

strongly identified with one man: Gifford Pinchot, another wealthy person with New York connections, who liked to describe forests as “factories of wood.”

3. 1895 to 1970: The Conservation Era

Gifford Pinchot was groomed to rule the Adirondacks. The son of a wealthy New York merchant, he made it his life’s work to bring the ideas of science and business management to public land. As Theodore Roosevelt’s Secretary of the Interior, and later as governor of Pennsylvania, Pinchot managed public land as if it were a factory that produced essential goods like lumber, forage, game animals, and drinking water. Like any business manager, he was obsessed with efficiency, profit margins, and long-term yield. But when he tried to apply these ideas to the Adirondacks, New York would not let him.

Pinchot’s life course was set when he read Marsh’s *Man and Nature* while a student at Yale, and he continued his education in the professionally managed forests of Germany and France in 1889-1890. He returned convinced that Americans could manage their dwindling natural resources as Europeans did; instead of cutting trees once and then abandoning the land, they could cut carefully to yield a steady supply of goods. One of Pinchot’s first jobs in America was writing a forest management plan for Ne-ha-sa-ne, the Hamilton County estate of William Seward Webb. In 1897 he published his first book, a small manual called *The Adirondack Spruce* that became a back-pocket bible for loggers.^{liv}

The state’s constitutional clause that prohibited logging in the State Forest Preserve was a major irritation to this Ivy League forester. Pinchot called the Forever Wild clause a “sentimental horror” enacted by people with good intentions but little knowledge. It was, he said, like “the case of a farmer who should refuse to cultivate his farm on the ground that he distrusted his own fitness and integrity.”^{lv} Although he supported several attempts to repeal the clause, public sentiment for the logging ban grew stronger and it survived each attempt. A conclusive defeat for the pro-logging forces in 1915 settled the issue.

Public forests in the Adirondacks were spared because three powerful groups wanted them uncut. The first and most important group was wealthy hunters, anglers, and vacationers from New York, Albany, and Boston. Adirondack visitors were appalled by the fires and devastation caused by cut-and-run logging. Since 1917, public lands in the state have been managed with their needs in mind. White-tailed deer, beaver, and other game animals have been re-introduced. Boat launching sites have been maintained and channels dredged for fishermen; trails have been cut to mountain summits and pristine lakes. Timber cutting can co-exist with hunting, fishing, hiking, and trapping, but only if it is done in moderation. Persistent reports of abuse and corruption in the State Forest Preserve soured relations between urban sportsmen and rural loggers between 1895 and 1915, leading to the lockout.

The second group was much less numerous than sportsmen, but they became more and more influential as the century wore on. Ecologists practiced a new form of biological

science that studied wild land in terms of inputs and outputs, as if nature was a physics problem or an economic system. New York produced several men who used early ecological ideas as a springboard for activism. In the 1920s, C.C. Adams of the New York State Museum advanced the view that the best way to protect wild mammals was to leave their habitats undisturbed. In 1917, the activist wing of the Ecological Society of America formed a Committee for the Preservation of Natural Conditions and elected Victor Ernest Shelford, a native of Chemung County, as its chair. The group became independent in 1946 and was re-named The Nature Conservancy in 1951. The Conservancy's first land acquisition, in 1955, was in Westchester County.

Scientists and sportsmen began the century united in defense of the wild, but the relationship grew more strained as the scientific wing turned to activism. The question of whether or not to support hunting on wildlife preserves caused a major rift in the National Audubon Society in the 1930s. The debate continues to this day, with some New York environmental groups flatly opposed to hunting, others seeking compromise, and the State attempting to mollify both hunters and wildlife-watchers.

Other early 20th Century defenders of natural New York were middle-class Americans who went into the wild in a new way. Automobile touring exploded in popularity after the First World War. "Tin can tourists," so named because they cooked dinner on campfires next to their cars, moved quickly from a fad to an important source of jobs and consumer spending. The tourists went to see natural wonders all over the state, from Ausable Chasm and Whiteface Mountain to Watkins Glen, the Genesee River Gorge, and Niagara Falls. When they got home, they voted to protect the land for public use while making it more accessible to cars.

Before Robert Moses became the great builder of New York City, he led a state government initiative to upgrade state parks for the new generation of recreationists. Automobile touring continued to grow during the Great Depression because it was a relatively inexpensive way to take a holiday. The parks themselves were strengthened by an infusion of New Deal laborers. By 1940, many New Yorkers were driving long distances to spend time in "natural" settings that were, in truth, intensively managed for swimming, picnicking, camping, and boating.

Many of New York's environmental stories are about urban and middle-class people advancing their interests in rural areas. The one urban interest that has consistently spurred quick action is clean water. In 1905, New York City needed more drinking water than its Croton reservoirs in Westchester County could hold. It spent massive sums to create a huge system of reservoirs and tunnels beginning in the Catskills, and in the process forced hundreds of residents off of their land. When the tunnels were filled in 1927, the City had a permanent reason to further restrict growth in the huge region that gave it pure water.

Another compelling reason for environmental action is a threat to public health. Concern over foul smells and dead fish in New York Harbor and Long Island Sound peaked in the 1930s, leading the federal government to establish an interstate sanitation commission for

New York, New Jersey, and Connecticut. When the first waste treatment plant opened on Coney Island in 1935, New York State permanently entered the business of controlling water pollution.

World War II introduced several new factors to environmental affairs in New York. For example, the first widespread use of a pesticide – DDT – occurred when the US military needed to control disease-carrying insects near troops in tropical jungles. The chemical worked miracles, so it was soon applied in marshes and wetlands across America. In 1948, a scientist named Dennis Puleston began studying damage to reproductive systems of birds in eastern Long Island.^{lvi} In 1962, Rachel Carson wrote about the connection between DDT and bird deaths in *Silent Spring*, drawing heavily on Puleston's research.

The war's environmental legacy included atomic weapons, and with the Bomb came knowledge that humans could destroy their planet. The legacy also included nuclear power, and with it came the knowledge that industrial wastes could contaminate an area for centuries. The war's legacy also included the Baby Boom, a huge generation of 77 million Americans born between 1946 and 1964. The baby boom led to a boom in suburban housing in the 1950s, and once-compact urban areas began sprawling into the countryside. Another war – the cold war – led Congress to create the National Defense Highway System. Now known as the Interstate Highway System, these roads greatly reduced the travel time between a city job, a suburban home, and a rural campsite.

Gifford Pinchot saw the environment as a factory that produced resources for public benefit. His idea became the consensus view in the United States by 1920, but views changed further as the 20th century evolved. In the 1940s and 1950s, business and government leaders began using technology to push the nature factory harder and harder. Farms were drenched with fertilizers and pesticides to make more food. Automobiles and industrial plants produced millions of tons of toxins and released them into the air and water, trusting nature to absorb them. Park managers cut more trails into the woods and built more campsites on lakeshores, trusting nature to clean up after the visitors once they went home.

Early challenges to this worldview came in 1926 and 1930 when two New Yorkers – Victor Shelford and Bob Marshall – separately released inventories of the last remaining wild places on the continent, and argued for their preservation. The challenges reached the courts and legislatures in 1945, when activists in the Adirondacks began a ten-year grassroots campaign to stop a dam on the Moose River. In 1948, the president of the New York Zoological Garden voiced a growing skepticism for technology and growth: “The grand and ultimate illusion,” wrote Fairfield Osborn, “would be that man could provide a substitute for the elemental workings of nature.”^{lvii} In the 1950s, researchers found traces of strontium-90 from atomic tests in baby teeth and mother's milk. In the early 1960s, photographs taken from space gave the mass media a powerful image of earth as a finite, self-contained ecosystem.

Much more than their parents, baby boomers realized the immediacy of environmental problems. When the oldest members of this generation turned 18, in 1964, they became

powerful and blunt advocates for change. Earth Day was a coming-out party for the new generation of environmental activists. It also served notice that the older, growth-and-production philosophy was evolving into a view of nature that emphasized cautious development, the measurement and control of environmental impact, and setting limits.

Conservation Vs. Preservation

Theodore Roosevelt was born in 1858 and raised among the privileged classes of New York City and Long Island. As a child, he was taught to venerate wild nature -- his father was a founder of the American Museum of Natural History, and the family regularly took camping trips in the Adirondacks and the West. Roosevelt was a lifelong adherent to the tradition of drawing spiritual strength from nature: as his biographer writes, “walking on silent, moccasin feet down a luminous nave of pines, listening to invisible choirs of birds, he came close to religious rapture.”^{lviii}

Roosevelt began his political career at age 24 in the New York State Legislature and gained popularity during a term as the City’s Police Commissioner. He was elected Governor of New York in 1898 and immediately called on Gifford Pinchot, a family friend, to be his chief advisor on conservation issues. But Governor Roosevelt resigned less than two years after taking office to become Vice-President. When William McKinley was assassinated in 1901, Roosevelt became the youngest President in US history. He learned the news while camping in the high peaks of the Adirondacks.

Setting up his cabinet in a hurry, Roosevelt named Pinchot Secretary of Agriculture; Pinchot later became head of the newly created US Forest Service. Promoting conservation on a national scale became the centerpiece of Roosevelt’s domestic policy agenda, with Pinchot serving as his chief advisor and closest friend in Washington. The conservation idea was highly popular with voters, but strongly opposed by Congress and businessmen. Roosevelt left the Presidency after two terms in 1908 with an unfinished agenda, but he and Pinchot had succeeded in making scientific land management the official US government policy. They also tripled the number of acres under federal control, from about 46 million to more than 150 million.^{lix}

New York’s conservation agenda proceeded in fits and starts, and eventually the state chose strict preservation over Pinchot’s conservation. In 1895, the legislature consolidated different agencies into one Fisheries, Game, and Forest Commission in an attempt to better enforce hunting and fishing laws. The Commission’s major role was to supervise a crew of fish and game “protectors,” and one member of its board was even dubbed the State Oyster Protector. In 1897, a three-member Forest Preserve Board was created to supervise the Adirondacks and Catskills. But enforcing game laws was difficult in the early years, especially for wardens that occasionally had to arrest their neighbors. Deer hunting season in the early 20th century took place in the summer, for the convenience of wealthy visitors, but was closed in the winter, when rural residents had the greatest need for food.^{lx}

Despite the tighter laws, great fires raged in the north woods in 1899. That same year, *The New York Times* revealed that widespread logging continued in the Preserve, in clear

violation of the law. The fires and bad publicity were setbacks to those who promoted scientific management, and they advanced the cause of hands-off forest preservation. Another setback to the management side came when the new State College of Forestry at Cornell University, under the direction of Bernard Fernow, made a brief attempt to demonstrate scientific management principles on 30,000 acres east of Tupper Lake. Fernow was forced to over-harvest the land to meet his budget, leaving unsightly fields of stumps. A fire he set to clear the land got out of control and burned part of a neighbor's estate. In 1903, as half a million more acres of Adirondack forest burned, Fernow's college was cancelled.

Scientific management became the rule in New York's privately-owned forests, but it would never again be tried in the Forest Preserve. In 1914, a coalition of loggers and land owners made another attempt to modify the state constitution to allow controlled timber cutting in the Preserve. Louis Marshall, a prominent New York City lawyer and member of the influential Association for the Preservation of the Adirondacks, argued eloquently against the proposal. He characterized Fernow's scientific forestry experiment as 30,000 acres "cut down flat from one end to the other." He said that a post-logging Preserve would be a "a howling wilderness . . . of stumps, enough to make one's heart sick to behold them." While the logging proposal was defeated, voters were sent a new version of the constitution that would allow fire trails, dead tree removal, and a new highway through the Preserve. The voters rejected that, too.^{lxi}

Marshall, a native of Syracuse, was not against forestry. In fact, he lobbied successfully to have a new State College of Forestry established at Syracuse University. When the college was established in 1911, he served as the first president of its Board of Directors. Yet Marshall also represented a faction that wanted some land set aside as wilderness aside from any economic consideration. The argument that wilderness should exist for its own sake ran like a philosophical thread from Henry David Thoreau to John Muir, but Louis Marshall may have been the first to successfully make the argument before a state legislature. And Marshall's son, Bob, took the argument to the people.

The Wilderness Lobby

Like Theodore Roosevelt, Bob Marshall was raised in a wealthy New York City family that spent its summers in the Adirondacks. He also shared Roosevelt's manic quest for physical activity, and his flair for dramatic language. Bob Marshall chose a path Roosevelt might have chosen, had he been born in 1900. His impact might have rivaled Roosevelt's if he had reached the age of 40.

Between 1916 and 1925, Bob and his brother George (guided by Herbert Clark) climbed all 46 Adirondack peaks above 4,000 feet. This feat made them heroes in the emerging culture of recreational hikers who lived to tramp through the wild. State officials made the first steps to accommodate hikers in 1917, when the first trailheads were identified and trails marked to fire towers on summits. Tellingly, the trails extended to roadside parking lots. Locals may not have welcomed the automobile traffic, but they needed it: the logging industry on private land in the Adirondacks collapsed in the years just before World War I, and tourism provided much-needed cash in struggling northern towns.

In 1919, the state agency responsible for the Adirondacks reported that tourism promotion would become a major new emphasis of its work. Instead of huge tracts of unused lumber, the state now recognized its forests as “the most important public vacation grounds in the United States.”^{lxii} The agency began marking trails and building campsites in the Preserve to match its new role.

New York wilderness enthusiasts soon got organized. Bob Marshall was one of their leaders. Another was Meade Dobson, a real estate developer who was also secretary of the New York-New Jersey Trail Conference, which built and maintained the New York section of the Appalachian Trail in the 1920s. Another was George Pratt, a former Standard Oil executive who was on New York’s Conservation Commission. In December 1921, Meade presided at the first meeting of the Adirondack Mountain Club (ADK), held at the Abercrombie & Fitch sporting goods store in New York City. Gifford Pinchot, Louis and Bob Marshall, and Franklin D. Roosevelt were early club members, along with many prominent lumber executives. The club was closely allied with other sporting organizations that had emerged around the state, including the Boy Scouts, the Girl Scouts, the Camp Fire Club, and the Utica Tramp & Trail Club.

In 1928, the ADK announced that it was opposed to cutting timber on the Forest Preserve, and many members that favored timbering resigned. After that, the ADK evolved along the same lines as the Sierra Club. It became an effective watchdog for the Forest Preserve, opposing legislation that would weaken the Forever Wild clause. It was a recreation group that organized hikes and trips across the state. And it emphasized education, beginning with a “school of the woods” in the 1930s at its Johns Brook Lodge. The school was lead by Dr. Orra Phelps, who directed the Club’s educational efforts for many years.^{lxiii}

Bob Marshall went on to earn a Ph.D in plant physiology and a career in the US Forest Service. In 1930, in an article called “The Problem of the Wilderness,” he re-stated the pro-wilderness argument in the voice of his generation: “There is just one hope of repulsing the tyrannical ambition of civilization to conquer every niche on the whole earth. That hope is the organization of spirited people who will fight for the freedom of the wilderness.”^{lxiv}

In 1934, Bob Marshall suggested that the Secretary of the Interior name a “Wilderness Planning Board” to choose areas that ought to be set aside by Congress. In 1935, he organized The Wilderness Society to lobby for the idea. In 1939, he died of a heart attack. Twenty-five years later, Congress passed the Wilderness Act and accepted many of the recommendations Marshall had made in the 1930s. In 2000, the Wilderness Society had 200,000 members and was active around the world.^{lxv}

Showdown At Moose River

By the time Marshall died, a militant group of wilderness defenders was watching out for the Adirondacks. Many leaders of the wilderness lobby lived in Schenectady. The most respected member was John Apperson, a General Electric engineer and lifelong bachelor

who once said, “Lake George is my wife and its islands are my children.”^{lxvi} In 1932, these forces defeated a proposal that would have allowed highways and state-owned lodges to be built in the Preserve. In 1939, the ADK’s Conservation Committee stated positions on 152 bills before the state legislature. In 1950, the lobby fought off a proposal to allow salvage logging in the Preserve after a major storm leveled thousands of acres.

The wilderness lobby’s greatest victory was also the first example of a now-familiar story. In the eleventh hour, environmental advocates learned of a damaging proposal and fought a public relations crusade to stop it. The story began in 1919, when the Black River Regulating District was formed to build hydroelectric power for the industrial development of Watertown. Dams along the Black, Moose, and Beaver Rivers were planned, including two that would flood large areas of the Forest Preserve at Panther Mountain and Higley Mountain. After decades on the drawing board, the State Conservation Department approved the Higley dam in 1945. The Panther dam was next in line.

Paul Schaefer and Edmund Richard, two proteges of Apperson’s, began organizing opposition to the dams in October 1945. Many conservation leaders initially refused to help them, believing that it was a lost cause. But Schaefer wrote eloquently about the lands that would be destroyed by the dam, attended meetings all over the state, and built the opposition steadily. In March 1947, Governor Dewey put the dams on hold and directed a state agency to study the problem. Several months later, the Governor arranged to kill the Higley proposal, but announced his support for the much larger reservoir at Panther Mountain – with Richard’s support. Schaefer fought to bring Richard back into the anti-dam fold, and persuaded him to become President of the Adirondack Moose River Committee. Eventually the Committee persuaded nearly 1,000 clubs and organizations to oppose the Panther dam, along with most of the East’s major newspapers. When the state Supreme Court rejected their case against Panther, Schaefer persuaded legislators to hold public hearings around the state and packed the hearings with anti-dam forces.

In 1950, Governor Dewey bowed to intense public pressure and signed a law that prohibited Panther Dam. The Black River District fought the law to the US Supreme Court, where it finally lost. In 1953, an amendment was added to the state constitution prohibiting future dams in the Forest Preserve, and was ratified by voters with a 59 percent majority. In 1955, a constitutional amendment proposed by the Black River District that would have specifically allowed the dam was defeated by a margin of 72 percent, and the issue was settled. In 1945, there were plans for 38 reservoirs in the Adirondacks. In 1955, thanks to an extraordinary mobilization of citizen opposition, all the plans were scrapped, and none had been built.^{lxvii}

Audubon’s Pioneer Activists

In the Nineteenth Century, the scientific study of life on earth was mostly an avocation for the wealthy. John James Audubon retired to his country home in upper Manhattan in the 1840s, after a life of producing bird portraits that married science and art. Theodore

Roosevelt's original career goal was to become a naturalist, and his first publication was a guide to the birds of Franklin County. In the Twentieth Century, however, the life sciences emerged and matured in the nation's universities. The professional scientists and philosophers who were concerned with plants, mammals, birds, insects, and ecosystems became heroes and leaders for the enthusiastic amateurs who were sworn to protect nature. At the turn of the century, this alliance produced the Audubon Society. In mid-century, it produced the Nature Conservancy. Both groups were born and raised in New York.

In the 1880s, some members of the American Ornithological Union (AOU) became increasingly concerned about the wholesale slaughter of wild birds for commercial use. Egrets and other wading birds were being massacred for their plumage. Commercial expeditions killed hundreds of ducks and other migrating birds for restaurant use or even just for sport, leaving their bodies to rot. Species such as the passenger pigeon were wiped out, while others like the Eskimo curlew were facing extinction. No laws existed to stop the shooting. In 1886, George Bird Grinnell, a big-game hunter, Manhattan resident, and editor of the magazine *Forest and Stream*, was motivated to act. He established the Audubon Society for the protection of wild birds, and in three months 38,000 people had joined. Most of the first members were activists associated with scientists at the AOU or the American Museum of Natural History.

Grinnell could not afford to support the new group and he disbanded it in 1888. But it began again in Boston in 1896, at the urging of a wealthy matron named Harriet Hemenway. A New York Chapter was formed in 1897, along with independent chapters in Massachusetts, Pennsylvania, and other states, and the activist coalition worked to pass a "model law," drafted by the AOU, banning the use of plumes in women's hats. Not all members of the AOU endorsed the group's actions, however. The more conservative scientists found the Audubon leaders brash and confrontational. Some Audubons were even opposed to any killing of animals, and in 1900 the study of animals usually involved killing them.

Because the hat-making and garment industries were based in New York City, much of the plumage trade came in and out of that port, and Audubon's early activities were centered there. In 1904, a wealthy New York insurance executive named Albert Willcox contacted William Dutcher, chair of the AOU's Bird Protection Committee. Willcox offered to pay for a staff and an office, and to leave at least \$100,000 in his will, if Audubon would incorporate and expand its activities to the protection of wild animals. In 1905, the existing 35 state clubs incorporated as the National Association of Audubon Societies for the Protection of Wild Birds and Animals, with headquarters in Manhattan. Dutcher was named the first Audubon President. By 1913, the society had a staff of six in a building at 66th street and Broadway.

Under the direction of President Gilbert Pearson, the Audubon Society pioneered three central activities of the modern environmental protection movement.^{lxviii} First, Audubon hired private game wardens to keep hunters away from important wildlife habitat. Their first wardens were hired in 1900 to protect Arctic terns and other seabirds along the

Maine Coast. The idea quickly gained Theodore Roosevelt's attention, and in March 1903 he set aside the first federal wildlife refuge (on Florida's Indian River). Later, Audubon itself began owning preserves. Its second preserve, established in 1924, was 12 acres of songbird habitat adjacent to Theodore Roosevelt's family mansion in Oyster Bay, Long Island.

In the 1920s, the science of wildlife management was still evolving and preserve wardens were often left to follow their instincts. Eugene Swope, the first warden of the Roosevelt Sanctuary, patrolled the grounds with a .22 rifle and tended to kill anything that was not a songbird. Cowbirds, blue jays, and crows were tolerated in small numbers, but starlings, owls, and hawks were shot on sight. Swope was proud of the fact that during his 14 years at the preserve, he killed 147 cats and 360 snakes. The phrase "balance of nature" was unknown to him, as it was to many managers of his era. Swope planted fruit trees, berry bushes, and other food crops for birds, with no regard to whether the plant was native to the area. After he left in 1938, volunteers worked for decades to restore the area to a semblance of what it had once been before he arrived.^{lxix}

Audubon's second trail-blazing activity was establishing a permanent environmental lobby. New York State's Audubon Plumage law passed in 1910, and the federal Migratory Bird Treaty Act passed in 1918. The anti-plumage campaign established Audubon as a full-time supporter and watchdog for federal environmental agencies such as the Fish and Wildlife Service, the Soil Conservation Service, and the Forest Service. The public and private wildlife refuge systems grew in tandem, their relationship shifting from admiration to antagonism depending on the issue at hand.

The third pioneering Audubon activity was environmental education. In 1899, the magazine *Bird-Lore* began under the editorial direction of Frank Chapman, an ornithologist with the American Museum of Natural History. The Audubon Society worked closely with the magazine, which became the unofficial journal of the birding movement. The Society bought the magazine in 1935 and re-named it *Audubon* in 1940. In 1910, the Junior Audubon Clubs began when the Society provided free classroom materials and field trips to public schools. Arthur Allen, a professor of ornithology at Cornell, created many of the early educational materials. By 1934, more than four million children across the country had passed through the club's ranks.

One of Audubon's most powerful allies came to the Society through the nine-member Bronx County Bird Club. Roger Tory Peterson was a small-town boy who got his passion for birds from the Junior Audubon Club of Jamestown, in Chatauqua County. As a young man, he virtually created the modern role of the birder. He and his cronies in the Bronx Club wielded binoculars instead of guns, chased bird sightings anywhere they could go (the Hunt's Point Dump was a favorite site), and passionately pursued their "life list" of species sighted. Peterson, a gifted artist, joined the Audubon Society in November 1934, six months after the first edition of his book, *A Field Guide to the Birds*, was published. The book has sold millions of copies and is still in print. During his seven years at Audubon, Peterson also re-designed and updated the Junior Club materials. Between 1934 and 1941, another five million children passed through the Club.

The Audubon Society was also one of the first organizations to recognize the value of color photographs in promoting environmental causes. *Audubon* magazine moved early to publish beautiful bird pictures in its pages, and the images symbolized wild nature to thousands of urban readers who rarely saw the real thing. In the 1930s and 1940s, Cornell ornithologist Olin Pettingill, along with Roger Peterson and others, toured the country with movie projectors to host the Audubon Screen Tours. The movies they showed to local bird clubs and civic organizations were among the first “wildlife films” ever made. The screen tours crew shot as well as hosted the movies; their lectures built the movement, but also established a new kind documentary filmmaking and proved its popularity.

The Audubon Society faced constant internal tension over how far it should push its agenda. The more cautious members, such as President Gilbert Pearson, argued that compromise with hunters and developers was sometimes necessary to stay at the bargaining table. More radical members, such as Rosalie Edge, fought bitterly against this view. In 1929, Edge headed up a faction that eventually pushed Pearson out. The Pearson-Edge battle continues throughout the environmental movement to this day, with different actors voicing the same opinions.

From Theory to Practice

The 1920 U.S. Census showed that for the first time, more Americans lived in urban areas than in small towns or farms. As it became the new norm, urban life encouraged new kinds of thinking about the environment. Scientists and philosophers began to consider the ethical and environmental aspects of large urban areas, an industrial economy, and growing consumer spending. When the century began, only a few voices questioned the need to cut trees for newspaper, strip hillsides for coal, and foul harbors with sewage. By mid-century, these voices had become a loud chorus, and in the 1960s they coalesced into a political movement.

An early proponent of everyday environmentalism was Albert Schweitzer, a physician and missionary who won the Nobel Peace Prize for his humanitarian work in Africa. Schweitzer’s ethical system was organized around the German word *Ehrfurcht*, which connotes awed humility in the face of a vast and mysterious power. Right conduct for a human being, he wrote in 1915, means showing equal reverence for all forms of life, and giving “to every will-to-live the same reverence for life that he gives his own.”^{lxx} When Schweitzer encountered a worm washed onto the pavement by a rainstorm, he would carefully place it back in the grass. He would not eat meat or kill any living thing unless it was absolutely necessary, and then only with compassion for the life that had to be sacrificed. He saw humans as a component of a great web, and argued that each part of the web of life demanded equal respect.

Schweitzer was also one of the first writers to place environmental ethics within Christian doctrine. His writings inspired Christians in the US as they joined battles against nuclear weapons and pollution in the 1940s and 1950s. In the 1960s, Christians in the “eco-justice” movement were the intellectual grandchildren of writers like Schweitzer and

John Burroughs. They argued that wild nature had a right to exist that was independent of man's interests, and that pollution was both unjust and disrespectful of God's creation.

Natural scientists also advanced these views, although their motivation may have been professional. Some of the leading scientist-activists came from New York. One was C.C. Adams, an ecologist from the New York State Museum who spoke out for the rights of predators.

The federal Bureau of Biological Survey (BBS) had adopted a policy of exterminating predators early in the century. Professional hunters from the BBS spread across the West, setting thousands of poison traps for coyotes and shooting wolves, cougars, and eagles on sight, to reduce the loss of livestock. This was in keeping with the Gifford Pinchot ideal of maximum production from public land, and it also matched Pinchot's conservationist disregard for aesthetics and other non-economic concerns. The policy was challenged in 1923 by the American Society of Mammologists, and for the next 25 years the Society waged a running battle with the government to spare the predators. C.C. Adams, a prominent animal ecologist, led the effort.

"We are probably the richest nation on earth," Adams wrote in 1924. "What would be the cost of maintaining one hundred mountain lions in North America? Would it stagger American civilization? We have millions of acres in National Forests, in the Public Domain, and in National Parks. Some of these could be managed in such a fashion that some of the animals could be preserved and eat deer meat!"^{lxxi} The killing of predators in National Parks was halted in 1936, although extermination efforts on some federal lands continued into the 1970s.

The steady intrusion of human influence into natural areas was a major challenge to ecologists, whose research was often ruined by pollution or development. The Ecological Society of America, founded in 1911, split over this problem. Some early members were not willing to involve a scientific organization in political fights over land. Others were willing, and the leader of the activist wing was a former farm boy from Chemung County.

In 1917, Victor Shelford became chair of the ESA's Committee for the Preservation of Natural Conditions. In 1926, the committee published *The Naturalist's Guide to the Americas*, an attempt to catalog all the known patches of wilderness left in the New World. In 1946, after the ESA dissolved the committee, Shelford founded the Ecologists Union, whose 158 charter members vowed to take "direct action" to save threatened areas. In 1951, the group incorporated and re-named itself The Nature Conservancy. Shelford remained active in the group until his death in 1968.^{lxxii}

Other New Yorkers pioneered techniques the Conservancy has used to protect millions of acres. In the early 1940s, a University of Rochester ecologist named Dick Goodwin and friends became concerned about Bergen Swamp, a threatened wetland about 20 miles east of town. Goodwin had no funds to survey the property, so he did it himself. Then he talked to the landowners until he persuaded a farmer to sell the first five acres for \$125.

Bergen Swamp is now a 2,000-acre preserve. Goodwin became President of the Nature Conservancy in 1956. In 2000, the group honored him as “father of the land deal.”^{lxxiii}

The Conservancy’s first land deal happened in New York. In 1955, members and friends purchased 60 acres of the Mianus River Gorge in Westchester County with a \$7,500 loan from the group. This was the first use of the Conservancy’s revolving Land Preservation Fund, which proved crucial to the organization's success. New York foundations were also instrumental in the early years. In 1966, the Ford Foundation made it possible for the Conservancy to hire its first full-time President. In 1968, Ford guaranteed a \$6 million line of credit to the Land Fund, which allowed the Conservancy to purchase and hold land for later sale to the US Government – an important technique that came to be known as the “government co-op.”^{lxxiv}

As ecologists looked for new ways to preserve the environment, universities themselves also began playing a direct role in environmental affairs. In 1914, the federal Smith-Lever Act created the Cooperative Extension system. University-sponsored agents were soon spreading across the country to share the findings of agricultural research with farmers. In New York, Cornell Cooperative Extension agents taught farmers how to control erosion, protect drinking water supplies, and improve sanitation. The father of the national system was Cornell professor Liberty Hyde Bailey, who led the “Country Life Movement” to improve rural living conditions.^{lxxv}

Bailey was a prominent horticulturalist whose influence went far beyond his field. Another part of the Country Life Movement encouraged farm children to study the natural world around them, just as John Burroughs and Victor Shelford had done. Bailey brought John W. Spencer, a Chautauqua County fruit-grower and writer, to Cornell to organize Junior Naturalist Clubs. Pamphlets with titles like “How a Squash Plant Gets Out of Its Seed” and “A Children’s Garden” were soon being mailed from Cornell to schools all over the country. Ever since, Ithaca has been a national center for the nature education movement.^{lxxvi}

In 1914, Bailey wrote a small book called *The Holy Earth* that placed him squarely in the “biocentric” tradition. Bailey argued against abusing God’s creation and for a sense of “earth righteousness” in society, so that people would “put our dominion in the realm of morals. It is now in the realm of trade.” The long-term success of this book persuaded millions of readers of the moral rights of nature. Forester Aldo Leopold acknowledged Bailey’s influence on his enormously influential moral argument for nature, *A Sand County Almanac*, which was released in 1948. *The Holy Earth* was also re-released in an inexpensive paperback edition in 1943 by the Christian Rural Fellowship, and was distributed worldwide.^{lxxvii}

Robert Moses and Franklin Roosevelt

Before 1925, public land in New York meant the Adirondacks and the Catskills. The state owned 19 small parks outside the Forest Preserve, and one 1,000-acre tract in the gorge of the Genesee River. The parks offered few public services, all of them were west of the Hudson River, and most had been donated. Buffalo financier William Letchworth had

purchased and donated the Genesee property, for example. The Treman family of Ithaca bankers purchased and donated Enfield Glen.

Independent boards ran the parks on small budgets, without support from the state, but parks had few needs before the age of automobile tourism. Most of them were really undeveloped preserves, such as the open land around the American side of Niagara Falls, or historic sites, like the Revolutionary War battlefield near Saratoga. It couldn't be more different today: in 2000, the New York State Park system served 65 million visitors to 152 parks and more than 100 historic sites, beaches, swimming pools, golf courses, and nature centers.

The changes began in 1923, when Robert Moses wrote and released a comprehensive plan for state park development. They were set in motion in 1924, when Robert Moses led a successful campaign to pass a \$15 million bond act. Then a strong State Parks Commissioner – Robert Moses – shoved the philanthropists aside and built the system he had imagined.

Robert Moses probably did more than any other single person to change the landscape of New York. Between 1924 and 1968, he headed dozens of appointed commissions and authorities that built dams, bridges, highways, and parks. He changed the courses of the St. Lawrence and Niagara Rivers. He filled in thousands of acres of marshland around New York City and filled the new lands with houses and roads. He created 27,000 acres of parks in New York City and Long Island alone, starting with Jones Beach, the largest public beach in the world, in 1926.

Governor Al Smith appointed Moses the executive director of the State Council of Parks in January 1927, giving him broad authority over the once- independent park organizations.^{lxxviii} Moses' state park building program proved enormously popular with voters because Moses understood the aspirations of the new middle class. He built parkways from New York and other urban centers to Jones Beach and other playgrounds, and he took pains to see that they were pleasant places for a weekend drive. The parks offered amusements that went far beyond hiking or sightseeing. Jones Beach had an amphitheater for concerts, and many rebuilt state parks included swimming places, tennis courts, golf courses, and cabins.

Robert Moses was secure enough and successful enough that in 1928, newly elected governor Franklin D. Roosevelt quickly re-appointed him. When the Great Depression engulfed the state, inexpensive state park vacations became more popular than ever. Moses kept his position as State Parks Commissioner, but he also directed programs in New York City that used unemployed men to build more parks and playgrounds.

Franklin Roosevelt was born in 1882 and raised on an estate in Hyde Park overlooking the Hudson River. Like his distant cousin Theodore, Franklin was an outdoor explorer with significant physical weaknesses and a strong spiritual attachment to nature; even as President, he spent time designing and ordering new plantings at Hyde Park.^{lxxix}

Park-building was popular with the wealthy, who favored preservation; with the middle class, who sought outdoor recreation; and with the poor, who needed affordable ways to escape from the city. This lesson was not lost on Roosevelt when he was elected President. One of the earliest and most popular New Deal programs was the Civilian Conservation Corps, which hired 3 million young men to complete roads, trails, and buildings in parks all over the country. In Ithaca, unemployed masons built artful stone walkways through Enfield Glen and Watkins Glen, making them at once easier to visit and more beautiful. By the time the Depression ended, a vast system of public recreational facilities had become an institution in New York and many other states.

The Depression also caused thousands of acres of privately owned land in New York to revert to state and federal government. Agriculture in New York had been in a slow decline since 1890, as exhausted soils and better transportation favored farming in the Midwest and South. The number of acres in farms peaked in 1900 at 22.6 million and then declined steadily. Farming in New York collapsed between 1920 and 1930, with the number of cultivated acres declining 13 percent. As the agricultural crisis deepened in the 1930s, Roosevelt moved quickly to provide relief. Federal laws established a Resettlement Administration that would buy marginal farmland and move its former owners to better land or other jobs. Between 1938 and 1941, about 16,000 acres of failing farmland was purchased along the high rocky ridge that separates Cayuga and Seneca Lakes. In 1985 this land was re-named the Finger Lakes National Forest, and it is the only unit of the US Forest Service in the state.^{lxxx}

Other Federal Laws in 1929 and 1934 enabled Washington to buy migratory bird habitat and regulate hunting on those lands. The expansion of the National Wildlife Refuge system was also a conservation measure, as wetlands not suitable for farming were being filled and plowed by desperate farmers. The government acquired almost 7,900 acres at the north end of Cayuga Lake to create the Montezuma refuge, and more than 10,800 acres of muckland near Batavia became the Iroquois refuge. In 2000, the Fish and Wildlife Service manages 13 refuges in New York that cover more than 28,000 acres.^{lxxxi}

New York State began acquiring land outside of the Adirondack and Catskill Preserves in the early 1900s, taking up more of the slack left by the long-term contraction of New York agricultural land. The number of acres in cultivation in New York in 1970 was 10.1 million, less than half the acreage of 1900. In 1990, the acreage total had declined even further, to 8.4 million.^{lxxxii} Agriculture remains important to the state's economy because the land remaining in cultivation is highly fertile. But millions of acres of former farms have reverted to forests, and nearly 700,000 of those acres were purchased and converted to forest by the state. State Forests, like National Forests, are managed as "multiple use" facilities; unlike the Preserves, they allow logging and grazing with hunting and hiking.^{lxxxiii}

Since the middle of the century, New York's public lands have been managed according to three different philosophies. Gifford Pinchot's conservation ideal of maximum sustained production is the rule in the state forests. The recreational vision of Robert Moses still governs the state park system. And in the Adirondacks and Catskills, great

public reserves of untouchable open land reflect the Roosevelt cousins' patrician love of the wild.

Pollution Control: Water, Air, and Land

In 1950, New York had 14.8 million residents, and more than eight in ten lived in urban areas. The volume of wastes produced by cities was becoming impossible to ignore. Safe supplies of drinking water and fish were increasingly threatened by inadequate ways of disposing of sewage and garbage. Automobile exhaust was making the air unsafe to breathe, especially in summer months. In the nineteenth century, waste and filth were accepted by New York City residents as facts of life. In the 1950s and 1960s, new standards of science and sanitation made them intolerable – and outside of major cities, media images of rat-infested garbage and smoke-darkened skies fueled a sense of crisis.

New York State government had been in the business of regulating municipal drinking water since 1904, when the state Water Supply Commission was created. All cities except New York were required to submit their plans for new water supplies to the Commission, and the Commission began reporting on water sources, water quality, and methods of sewage disposal. When the State Department of Health was created in 1901, one of its duties was to investigate diseases caused by “overflow of the canals.” But the first serious effort to control water pollution did not begin until 1935, when a federal Interstate Sanitation Commission was established to regulate sewage in New York, New Jersey, and Connecticut.

Basic sanitation laws had a dramatic impact on health in America. Expectancy of life at birth increased from 47 in 1900 to 54 in 1920, 63 in 1940, and 70 in 1960, mostly because of sharp declines in viral and bacterial diseases.^{lxxxiv} Sewage treatment was a major contributor to these declines. By 1960, 80 percent of New York City's sewage during dry weather was cleaned before it was discharged. But a lot of filth was not being treated. Sanitary engineers in 1895 had combined the city's storm sewers with its waste sewers. Each heavy rain overwhelmed the system and dumped millions of gallons of raw waste into the Hudson and the harbor. In 1965, voters passed the Pure Waters Bond Act and released \$300 million for sewage treatment statewide.

Air pollution was largely unregulated in New York until 1957, when state law created an Air Pollution Control Board and empowered it “to enter and inspect any property or motor vehicle for the purpose of identifying pollutants.”^{lxxxv} The Board may have had the power, but its small staff could only enforce the law against the most egregious polluters. Air pollution was added to the jurisdiction of the federal Interstate Sanitation Commission in 1962, and the first federal Clean Air Act was passed in 1963. But the number one source of air pollution – the private automobile – was not regulated until 1970, when amendments to the Clean Air Act forced automobile manufacturers to install pollution control devices.

Garbage disposal laws also lagged behind the need. Before the federal Solid Waste Disposal Act of 1965 was passed, state and local health departments regulated landfills,

and they had widely varying standards. Some cities burned their garbage in open pits; others buried it in unlined trenches that allowed toxic liquids to ooze into the water table.

President Lyndon Johnson formed a Commission on Natural Beauty in 1965. The state followed with its own Natural Beauty Commission in 1966. Both were attempts to address the sense that America's land, water, and air were fouled by the wastes of manufacturing and consumer culture. But like the early anti-pollution laws, these efforts had little or no effect on the public's mood. Books, films, and television reflected the concern with increasingly shrill warnings. In a memorable 1971 television commercial, the actor Iron Eyes Cody, clad in buckskin and wearing a feather headdress, shed a single tear as he gazed upon a mountain of garbage.^{lxxxvi}

By the end of the 1960s, the Conservation Era had run its course. It was no longer enough to manage nature for human needs. Nature had become the environment, and most Americans agreed that the environment was in grave danger because of human activity. Instead of serving a modern society, nature now had to be protected from it. --

4. 1970 to 2000: The Environmental Machine

Earth Day came early to Port Washington, Long Island. On April 22, 1969, a small group of students from Paul Schreiber High School put on rubber boots, picked up garbage bags, and waded into a dirty creek that ran through the village. Picking through the muck, they cleaned out several hundred pounds of beer cans, food wrappers, and old tires. "We were eager to get the lead out of gasoline, expunge all pollutants, and leave the world a better place than we found it," says Robin Weston, a member of the school's 1969 Earth Day Committee. In small ways, they did.

Looking beyond their neighborhoods, New Yorkers saw a United States that seemed to be coming apart. The invasion of Cambodia by American troops sparked violent protests across the country in the spring of 1970. At Kent State University, one demonstration horrified the nation when National Guard soldiers fired into the crowd, killing four students. After the shootings, some anti-war activists began calling for a violent revolution. And then, on April 22 of that year -- a crisp, sunny day that also happened to be Lenin's birthday -- 20 million Americans gathered peacefully across the country. People picked up litter, planted trees, danced to rock bands, and held street theater. The purpose of this huge, happy party was to show public support for a cleaner environment.

Earth Day started small in Port Washington and a few other places, but the time was right for it. Just one year later, it became the largest planned demonstration in US history. The size of the 1970 turnout shocked even the organizers. Politicians noted that Earth Day participants seemed willing to work within the system instead of tearing it down. In White Plains, junior high school students painted and cleaned up the local railroad station. In New York City, crowded Fifth Avenue sidewalks parted when demonstrators held up dead fish from the contaminated Hudson River and shouted, "You're next, people!"^{lxxxvii} In one extraordinary day, the environmental movement entered the mainstream.

Some observers were troubled by the change. “Just as the Caesars once used bread and circuses, so ours were at last learning to use rock-and-roll, idealism and non-inflammatory social issues to turn the youth off from more urgent concerns which might really threaten the power structure,” wrote journalist I.F. Stone. If the war was not ended and nuclear weapons controlled, said Stone, “we may wake up one morning and find there is nothing left on Earth to pollute.”^{lxxxviii}

But something really had happened. Earth Day embodied the fear that human activities were destroying the planet, and it showed that millions of Americans were determined to clean up the mess. It also uncorked a steady stream of major environmental legislation that did not slow down for ten years. The most astute politicians were first on the bandwagon. On January 1, 1970, President Nixon signed the landmark National Environmental Policy Act, which required the federal government to analyze the environmental impact of its activities. On Earth Day 1970, New York Governor Nelson Rockefeller signed the law that created a new “super-agency,” the Department of Environmental Conservation (DEC). By the end of the year, the US Environmental Protection Agency was on the books. During the 1970s, court decisions and federal laws placed hundreds of new requirements on state and local governments. By 1980, environmental affairs had become a major focus of government at the local, state, and national level.

TABLE 2: Partial List of Federal Environmental Laws Passed Between 1970 and 1980

- 1970: National Environmental Policy Act** requires federal government to analyze the environmental impact of its activities, ensuring citizen participation in decisions involving federal funds.
- 1970: Occupational Safety and Health Administration** established, regulating toxic substances and hazardous conditions in the workplace.
- 1970: Environmental Protection Agency** created, coordinating federal activities concerned with pollution control.
- 1970: Clean Air Act** allows federal regulation of industrial and auto emissions. Much of the enforcement is left to states.
- 1972: Water Pollution Control Act** mandates federal standards for sewage treatment and industrial discharges into waterways. Much of the enforcement is left to states.
- 1972: Insecticide, Rodenticide, and Fungicide Act** sets basic regulations for these chemicals.
- 1972: Noise Control Act** allows regulation and litigation of “noise pollution.”
- 1972: Coastal Zone Management Act** regulates building and dredging on coastlines.
- 1972: Marine Mammals Protection Act** bans US whaling and encourages global ban.
- 1973: Endangered Species Act** protects habitat of rare plants and animals.
- 1974: Safe Drinking Water Act** federalizes drinking water regulations.

- 1976: Toxic Substances Control Act** begins assessment and clean-up of toxic dumps.
- 1976: Resource Conservation and Recovery Act** sets federal standards for landfills.
- 1976: Federal Land Management Act** updates regulations on western lands.
- 1976: National Forest Management Act** encourages designation of wilderness areas.
- 1977: Clean Air Act** amended with stricter emission standards.
- 1977: Clean Water Act** amended and strengthened.
- 1980: Alaska National Interest Lands Act** sets aside 100 million acres as wilderness.
- 1980: Superfund** (Comprehensive Environmental Response, Compensation, and Liability Act) finances program to identify and clean up abandoned toxic waste sites.

Source: Shabecoff, Philip, *A Fierce Green Fire: The American Environmental Movement*

The new laws and regulations did get results. Many measures of water quality stabilized or improved during the 1970s, for example, and control of pesticides such as DDT had a positive effect on wildlife. But the new rules also frustrated farmers, business people, and others whose normal activities had suddenly become illegal. In 1980, the anti-environmental movement helped elect a President who said that the new laws had gone too far. But when Ronald Reagan tried to dismantle the environmental bureaucracy, the effort backfired. Massive public opposition caused most of his proposals to fail, and environmental organizations saw their biggest membership increases ever. Environmental affairs went through a federal trial in the 1980s, and they emerged stronger than before.

The backlash never really took root in the Empire State. Despite revenue shortages and intense budget fights in the 1980s, grassroots support for environmental causes in New York was consistently too strong for politicians to ignore. Responding to the pressure, Democratic governors Hugh Carey and Mario Cuomo preserved and expanded the DEC and its regulatory structure during the 1970s and 1980s. Among the state's major advances were the first regulations on private land in the Adirondacks, in 1973; a state Superfund to clean up toxic waste sites, in 1982; and the first of several bond acts in 1986. In 1994, Republican George Pataki was elected after promising continued leadership on clean air, clean water, and open space. In 1996, he campaigned successfully for another bond act devoted to these causes.

As the state strengthened its commitments, environmentalism began mingling with other issues. During the 1990s, the number of land trusts operating in New York increased from a handful to more than 80, and hundreds of privately-owned nature preserves and conservation easements were established. City planners and transportation experts often turned to these groups when looking for ways to manage "urban sprawl" without resorting to government action. From skyscrapers in Manhattan to dairy farms in Delaware County, executives found that "green business" practices could deliver

dramatic reductions in waste and energy use while increasing profits. African-American and Latino neighborhoods became centers for the “environmental justice” movement, which challenged plans to locate toxic waste dumps and other high-impact sites near low-income neighborhoods.

In the 1990s, the vast majority of New Yorkers said they were “environmentalists”^{lxxxix}, and New York’s delegation to the US Congress received consistently high rankings from the League of Conservation Voters. Yet environmental issues continued to be difficult and contentious. Beginning in the 1970s, opposition to environmental objectives became “persistent, profound, and effective,” according to historian Samuel P. Hays.^{xc} Businesses moved aggressively to control the terms of the environmental debate by controlling information about environmental problems. The pattern was clear: as soon as a new law was passed, pro- and anti-environmental forces shifted their focus to regulatory agencies and courts, where they fought through the same controversies at least once more. In this arena, decisions were often based on the conflicting testimonies of scientists hired by the opposing sides.

Although environmental causes were consistently popular, government efforts to improve environmental quality were not usually met with public acclaim. More often, the changes were slow in coming and difficult to achieve.

Courts, Citizens, and Cash

The environmental laws of the 1970s were pushed into existence by determined groups of citizens. Some were lawyers who seized new opportunities to sue on behalf of nature. Others harnessed the public’s concern and created powerful lobbies in Washington and the state capitols, beginning with Albany. Others worked behind the scenes to secure large donations from foundations and the wealthy, getting the money that made the machine run. And for all three groups -- the lawyers, the activists, and the fund-raisers -- the center of the action was in New York City.

The lawyers got their first break on December 29, 1965, when the Second Circuit Court Of Appeals ruled that a group of citizens calling themselves the Scenic Hudson Preservation Conference had the legal standing to sue an electric utility to stop its building plans at Storm King Mountain. The Court also ruled that the Federal Power Commission had to consider the project’s impact on the “unique beauty and historic significance” of the area before it could grant Con Edison a building permit.^{xcⁱ} The field of environmental law was born on that day, and it grew up fast. In 1970, environmental statutes filled fewer than 30 pages of the *Environmental Law Reporter*. By 1989, they filled more than 800 pages.^{xcⁱⁱ} Many of the statutes were written to answer questions raised by court decisions.

Two New York groups led the legal efforts that widened the reach of environmental law. After leading Scenic Hudson’s legal campaign, David Sive and several colleagues went on to start the National Resources Defense Council (NRDC), which still maintains its headquarters in New York City. In 1971, the NRDC led the campaign for passage of the Clean Water Act, which allows citizens to sue directly for environmental harm. In 1973,

the group began actions that lead to the phase-out of lead in gasoline. In 1978, it succeeded in removing ozone-depleting chemicals from aerosol cans. In 2000, the group has over 400,000 members and is active around the world.^{xciii}

In 1966, a Patchogue lawyer named Victor Yacone sued the Suffolk County Mosquito Control Commission to prevent it from further use of DDT. The plaintiff in the suit was Yacone's wife, Carol, and the energy behind it came from the Brookhaven Town Natural Resources Committee. The suit drew on research that showed the destructive effects of DDT on fish and birds in the area -- the same research cited by Rachel Carson in her book *Silent Spring*. After winning a local injunction, the group re-organized in 1967 as the Environmental Defense Fund and pushed for a permanent ban.

Early support from the National Audubon Society and the Ford Foundation allowed the Environmental Defense Fund to expand its focus beyond DDT, and also beyond New York's borders. In 1970, it brought whales onto the US Endangered Species List. In 1972, it won a permanent nationwide ban on DDT. In 1978, it helped save a 114-mile stretch of the Delaware River from a dam planned for Tocks Island. In 1992, its computer models helped convince New York State legislators that energy from a huge hydroelectric project in James Bay, Quebec might not be needed; New York canceled its contract for the power, killing the project. In 1997, Environmental Defense celebrated its 30th anniversary as an international organization devoted as much to education as to litigation, with more than 300,000 dues-paying members.^{xciv}

Non-profit environmental organizations in New York gained members steadily through the 1970s. In 1976, they also gained clout in Washington when Elvis Stahr, President of the Manhattan-based National Audubon Society, persuaded Barber Conable, a Congressman from upstate New York, to lead an effort to reform the tax laws. The "Conable Act" allowed smaller non-profit organizations to spend up to 20 percent of their budgets on lobbying activities without endangering their tax-exempt status. Larger organization could spend up to \$1 million a year. The Act created a new and powerful force -- the environmental lobby.^{xcv}

The Conable Act became necessary in 1966, when the IRS revoked the Sierra Club's tax exemption for excessive lobbying. The Club survived that blow, grew steadily, and developed a reputation for organizing dramatic grassroots campaigns. In the 1980s, Club members in New York State organized as the Atlantic Chapter. In 2000 that chapter had 32,500 members, including nearly 12,000 in New York City. Unfortunately, the Club's reputation for waging epic battles also extended to its internal politics. In the late 1990s, a dispute between members of the New York City group escalated into lawsuits that cost the national organization hundreds of thousands of dollars.^{xcvi}

The National Audubon Society is an international organization with 550,000 members, 500 chapters, and more than 250,000 acres of wildlife sanctuaries, but its roots are in the better neighborhoods of Manhattan (see chapter 3). In 2000, Audubon had 30 formally organized chapters and almost 42,000 members in the Empire State. It also had informal

ties to at least 29 more bird clubs in New York, and its nature education programs served dozens of nature education centers around the state.^{xcvii}

The Nature Conservancy is another international group with New York roots (see chapter 4). It protects millions of acres of land around the world through the ownership of nature preserves and conservation easements, including more than 277,000 acres in New York State. The Conservancy has 900,000 members, making it the world's largest private conservation group. Eight percent of its membership (70,000 people) lives in New York State. Independent from the group, but using the same tools, are smaller private organizations that protect even more of New York's sensitive and sacred lands. In 2000, at least 86 land trusts were active in New York. Like the Nature Conservancy, the land trusts own nature preserves and easements that permanently restrict the development of private property.^{xcviii}

The public's interest in outdoor adventure exploded in the 1970s, and groups devoted to hiking and recreation grew to meet the new demand. Between 1964 and 1974, the Adirondack Mountain Club started 12 new chapters that stretched from Niagara Falls to northern New Jersey.^{xcix} Trout Unlimited, a national organization that protects wild rivers, has 37 chapters in New York. In 2000, Ducks Unlimited signed an agreement with federal, state, and local governments to restore up to 10,000 acres of wetlands on Long Island.^c

In addition to the national organizations, dozens of statewide and local groups emerged during the 1970s and 1980s. Many were ad hoc organizations organized in response to a crisis, such as the Citizens Committee to Save Cayuga Lake, which was formed in the late 1960s to monitor plans for a nuclear power plant. But even the most rural areas of New York now have permanent citizen's groups. Each county has a Conservation Commission or an Environmental Management Council (EMC), usually staffed by volunteers, to coordinate public and private action on behalf of the land. The St. Lawrence County Board of Legislators created its EMC in 1971 to promote "the preservation and improvement of the quality of the natural and man-made environment" by "fostering unified action on environmental problems among local governments and among public and private agencies and organizations." The group's 15 members include five educators, two law enforcement officers, a wildlife biologist, and a heavy-equipment operator.^{ci}

Most of the money that runs the environmental movement comes from membership dues and small contributions. But foundation and corporate giving has been central to the success of many groups, particularly in the early years. In 1971, for example, a \$285,000 grant from the Ford Foundation was critical to the survival of Environmental Defense. New York City, the undisputed center of the grant-making world, is home to many foundations that loyally assist the movement. The biggest donor in 1990 was the Ford Foundation, in midtown Manhattan, which gave \$13 million to environmental causes. The Rockefeller Foundation, a few blocks away, gave \$11 million. Many other New York foundations also have environmental leanings. The Beinecke Foundation of Rye gave more than \$250,000 to the NRDC and \$200,000 to the Open Space Institute in 1990.

That same year, the Mary Flagler Cary Trust of New York City gave \$295,000 to the Sierra Club Legal Defense Fund.^{cii}

One of the most influential forces in the world of environmental funding operates from a small office at 437 Madison Avenue. Since 1987, the Environmental Grantmakers Association has held annual retreats where activists and funders court each other and discuss long-range strategies. Over 160 foundations belonged to the Association in 1993. In 2000, the Association also maintained working groups on such topics as sustainable agriculture, the economy, transportation, minorities, toxic waste, and growth management.^{ciii}

Law groups, activist groups, foundations, and smaller donors have developed well-organized systems that can act rapidly to protect land and pass environmental legislation around the globe. To a great extent, the headquarters of this cartel is in New York City.

Energy and Economics

The battle over the Storm King plant was important not only to legal history. It also came at the beginning of a debate over energy and how to provide enough of it to New York City and the rest of the country. As the debate continued, more New Yorkers began considering alternatives to the “official solution” of increasing the number of plants fired by oil, coal, and nuclear fuel. Rather than accepting the idea that the state’s supply of electrical energy had to increase forever, activists began exploring the potential for conservation and renewable sources.

Consolidated Edison built several large power plants in the 1950s and 1960s in an attempt to keep up with the rising demand for electricity in New York City. These included the first privately owned nuclear power plants in the US, at the Hudson River town of Buchanan. When these reactors (known to most people as Indian Point) opened in 1962, they proved far less successful than promised. A large supply of river water was needed for cooling the plant, and the intake pipes occasionally crushed large numbers of fish. The water returned to the Hudson was 18 degrees warmer than the natural river water had been, and the difference produced a temperature shock that killed more fish. Then a pipe leading to the reactor cracked, and the plant was closed for repairs for most of 1970.

Public opposition to the Storm King pumped water storage project centered around the negative impact the project would have on scenery, but there was also a larger issue. In 1969, Con Edison announced that it needed to add 6,000 megawatts of generating capacity over the next decade. It proposed that 5,000 of those megawatts come from new plants located along the Hudson River, most of them nuclear. The prospect of a dozen new power plants warming the river, combined with similar expansion plans elsewhere in the state, helped galvanize the emerging opposition to nuclear power. A group of citizens began collecting information and challenging official statements about Indian Point (in 2000, this group was still active as The Indian Point Project). On Long Island, the SHAD Alliance waged a protracted and successful battle against the Long Island Lighting Company (LILCO) to stop a proposed nuclear plant at Shoreham. In Ithaca, the Citizens

Committee to Save Cayuga Lake successfully lobbied New York State Electric and Gas (NYSEG) to switch from nuclear to coal fuel for its plant at Milliken Station.

Local groups in New York were linked to other anti-nuclear groups through Ralph Nader's Critical Mass Project and the Nuclear Information and Research Service, both in Washington DC.^{civ} But in September 1979, the global anti-nuclear movement briefly focused on New York City, where a group called Musicians for Safe Energy (MUSE) held five days of "concerts for a non-nuclear future" at Madison Square Garden. The bill included major stars such as Bruce Springsteen, Jackson Browne, and Bonnie Raitt. It later became a successful record album and film, generating \$750,000 and enormous publicity for the cause. One of the chief MUSE organizers was John Hall, a songwriter and rock musician from Saugerties. He later became a founder of a local environmental group called the Winston Farm Alliance, a member of the Ulster County Legislature, and president of the local school board.^{cv}

The "No Nukes" concerts were a high-water mark in the anti-nuclear movement. During the 1980s, utilities canceled one nuclear construction project after another, and in the 1990s they turned to smaller plants fired by clean-burning natural gas. Negative publicity and protests played an important role in slowing down the nuclear construction boom, but the mortal blow was dealt by a combination of science and economics. As scientists learned more about the potential for accidents and the difficulty of waste disposal, it became more expensive to build a nuclear plant that would pass federal licensing requirements. In practice, nuclear fission turned out to be a tremendously inefficient way to boil water and heat homes. The energy analyst Amory Lovins famously noted that making electricity from fission is "like cutting butter with a chainsaw."^{cvi}

When disputes over energy moved into the courtroom, they often turned on highly technical matters such as whether planned safety equipment was adequate or whether the projected demand for power was in fact needed. To match the experts employed by utilities and licensing agencies, the earliest citizens' groups turned to academic and amateur physicists, biologists, and statisticians. In these early salvos of the war of experts, two New Yorkers were particularly important to the environmentalists. The first expert is Joanna Underwood. A former New York University professor, she founded a research organization called INFORM in 1974 and was still its executive director in 2000. INFORM distributes information on strategies for pollution control and waste reduction. Their first publication described the cutting-edge technology of the day for controlling air pollution, and showed communities how to investigate local problems. Later projects have addressed subjects ranging from chemical hazards to water use, transportation, and clean sources of energy.^{cvii}

The other expert was one of the first American scientists to warn the public about pollution. Barry Commoner is a Brooklyn-born and Columbia-educated son of Russian immigrants. In the 1950s, as a member of the St. Louis Committee for Nuclear Information, Commoner collected baby teeth around the country, analyzed them, and found radioactive isotopes from the fallout of atomic tests. A brilliant biologist, Commoner also became a scientific celebrity with popular books on the environmental

crisis like *Science and Survival* (1966) and *The Closing Circle* (1971). In 1980, he helped organize the Citizen's Party and ran for President as its candidate. And in 1981, he returned home to Queens College to direct the Center for the Biology of Natural Systems. In the 1980s and 1990s, Commoner oversaw the development of groundbreaking environmental research, including computer models that could find the sources of dioxin and other airborne pollutants that end up in the Great Lakes. Models like these proved essential when citizens challenged plans for incinerators that burned toxic waste and garbage. In 1987, the Center organized a pilot projects in East Hampton that recycled and re-sold 85 percent of residential trash. Their success helped bring large-scale trash recycling to greater New York.

One of Barry Commoner's simplest and most persuasive points is that the most successful form of pollution control is to change the ways goods and services are produced. The most dramatic environmental successes since 1970, such as removing lead from gasoline and banning DDT, involved eliminating pollutants instead of trying to control them. "We now know that environmental pollution is an incurable disease," he wrote. "It can only be prevented."

In the 1970s and 1980s, environmental impact statements often listed the costs and benefits of a proposed action, such as a new power plant. The ideology behind cost-benefit analysis was that of the free market. According to economist Milton Friedman, "the real problem is not 'eliminating pollution,' but trying to establish arrangements that will yield the 'right' amount of pollution: an amount such that the gain from reducing pollution a bit more just balances the sacrifice of the other good things . . . that would have to be given up in order to reduce the pollution."^{cvi} Commoner refused to accept the idea of a 'right' amount of pollution, and in time he also came to reject the free market. "Sustainable development --that is, economic development that conforms to the principles of ecology -- calls for social governance of the means of production," he wrote.^{cix}

Commoner courted controversy by linking environmentalism with democratic socialism, especially when he ran for president against Ronald Reagan. But his vision of a society that produces no pollution and consumes fewer goods endures as a challenge to consumerism.

The prevention philosophy took hold in the 1990s, as the reality of global warming became clear. In May 2000, the state began a four-year "Green Building Tax Credit Program" that reduces the property tax on buildings that meet strict standards for energy efficiency, indoor air quality, and the use of construction materials. The National Audubon Society's new headquarters building, which opened in Manhattan in the late 1990s, drew national attention for a design that dramatically cut energy use during construction and operation. With the tax credit, more builders will follow suit.

The DEC Empire

Since its birthday on Earth Day 1970, the New York State Department of Environmental Conservation (DEC) has struggled to keep up with an ever-expanding list of duties. The

DEC grew out of the Conservation Department, which managed natural resource areas such as water supply, hydropower, fish and game, parks, and forests. The new agency also assumed responsibility for the quality of the state's air, water, and land. As the environmental movement expanded, the DEC expanded with it. In 1970 the agency employed 2,140 people. In 2000 it had 4,000 employees working in eighteen divisions in Albany, as well as in nine regional offices that divided up the state by counties.^{cx}

The DEC has three main functions: natural resource management, environmental quality protection, and the promotion of public health, safety and recreation. Its divisions of Fish and Wildlife and Marine Resources are part of the historic "core" of the agency, with a broad mandate. They protect and manage fish, wildlife and marine species; issue hunting and fishing licenses; stock ponds and fields with fish and birds; conduct public education programs and hunter safety courses; protect and restore habitats; provide public boat launches; and provide access for fishing, hunting and trapping.

The other division with a long pedigree is Lands and Forests, which acquires and maintains land for public use; manages state forests and the Adirondack and Catskill forest preserves; promotes use of public and private forest resources; and educates people about forests. The relatively small Mineral Resources division regulates and monitors the drilling and production of oil, natural gas and solution salt; the underground storage of natural gas and liquefied petroleum gas; and the extraction of rocks and minerals, including reclamation of affected land.

Five DEC Divisions focus on maintaining and enhancing environmental quality. The Air Resources division regulates, permits and monitors sources of air pollution; forecasts ozone and stagnation events; educates the public about reducing air pollution; and researches atmospheric dynamics, pollution and emission sources.

The Environmental Remediation division cleans up inactive hazardous waste sites and abandoned industrial sites, also known as "brownfields." This division also builds wastewater treatment facilities; manages a Spill Prevention and Response Program; and regulates petroleum and chemical bulk storage facilities, underground storage tanks, and major oil storage facilities.

The Pollution Prevention division promotes environmental management strategies that avoid creating pollution at its source; provides technical assistance and outreach through conferences, workshops, clearinghouses and publications; coordinates DEC's integrated facility management program; and coordinates the State Agency Environmental Audit Program.

The Solid and Hazardous Materials division carries out regulatory programs for landfills and incinerators. It also manages the state's policy toward pesticides and radioactive wastes. It encourages waste reduction, reuse and recycling, and it provides cancer researchers with a database on pesticide application and sales.

The Water division protects water quality in lakes, rivers, aquifers and coastal areas by regulating wastewater discharges, monitoring water bodies and controlling surface runoff; providing technical assistance and education; managing freshwater resources; and helping prevent flood damage and beach erosion.

The DEC also builds and manages a vast network of campgrounds, trails, and recreational facilities, including the Belleayre Mountain Ski Center in the Catskills. It operates environmental education centers and summer environmental camps, produces audiovisual programs, and publishes the *New York State Conservationist* magazine. Because the DEC issues permits to the industrial users of New York's water and air, it maintains its own court system and legal team, and is empowered to collect fines. It has its own police force, known as Environmental Conservation Officers (ECOs), who enforce environmental laws, as well as forest rangers, who fight fires; promote the safe use of the outdoors; license outdoor guides; and conduct search and rescue missions.

The DEC is the environmental emperor of the Empire State, and the dominant force in environmental affairs. But it has not always been at the forefront of change. Much of the DEC's work was handed to it by laws passed in Washington DC. Many state laws administered by the DEC are made unnecessary by stricter local laws. Some DEC programs were created in response to short-term political pressure from citizens or business groups, not because of any long-term strategy.

New York's environmental affairs since 1970 are a complicated story. Elected officials, civil servants, citizen activists, and business associations fight to define problems and determine responses. Landowners, business owners, recreational users, and consumers accept or reject the results. It is an endless, complex process that unfolds simultaneously on three levels -- federal, state, and local. What follows are examples of how this process has worked in several of the most important environmental areas: solid waste, pesticides, toxic waste, clean water, clean air, wildlife, open space protection, and the Adirondack Park.

Solid Waste

In 1970, New Yorkers disposed of their garbage in two ways: burying it in landfills, or burning it in incinerators. Most of the landfills were small, leaky dumps, and most of the incinerators were backyard barrels or apartment smokestacks.

Changes in solid waste management since 1970 are among the state's biggest environmental success stories. Today, some New York communities recycle or re-use half of their garbage. The last landfill in New York City will close in December 2001, and the number of active landfills elsewhere in the state is declining. Trash incinerators and burn barrels are increasingly regulated. The solid waste story shows how small changes in design and policy can produce big benefits.

In 1973, the state authorized the DEC to develop rules governing landfill operations. In 1976, the federal Resource Conservation and Recovery Act required all states to draw up plans for the disposal of their solid waste, to make inventories of their dumps, and to

meet safety standards for disposal. In 1977, the first state regulations were put on the books to ensure landfill security, monitor nearby water pollution, and properly seal the contents. Each landfill's permit spelled out details specific to the site. As these regulations increased the cost of operating landfills, the number of landfills decreased. A growing share of the state's garbage was trucked to large regional dumps that served many counties or even many states.

Environmental groups kept pushing the solid waste issue forward in the 1980s, looking for ways to reduce the waste stream. The DEC began adopting annual plans for solid waste management in 1980. In 1982, after a statewide lobbying campaign by the New York Public Interest Research Group (NYPIRG), a "bottle bill" was passed requiring a five-cent deposit on all beer and soda cans sold in the state. But issuing mandates and writing annual plans are not the same as causing change. New York State was shamed in 1987, when the garbage barge *Mobro* from Islip, Long Island spent 156 days at sea and three months at harbor, fully loaded, with no one willing to accept its rotting cargo.

In 1989, New York City passed a law requiring residents to separate recyclable materials from their household trash. The city's trash-collecting systems have been slow to catch up with the law, so the city's citizen groups have been leading the way. For example, in the early 1990s a nonprofit group called WE CAN collected recyclable materials from Manhattan apartment buildings, offices, and schools, with the proceeds supporting the homeless.

In 1992, the state DEC required all municipalities in the state to have source separation programs in place. New York City's trash system is still lagging, but its performance is improving. In 1998, the City recycled 14 percent of its garbage, compared with a state average of 32 percent.^{cxix}

Nationally, the amount of material diverted from landfills and incinerators by recycling increased 67 percent between 1990 and 1996, from 34 million to 57 million tons.^{cxii} And as the decade wore on, the emphasis shifted toward reducing waste instead of recycling it. Often this meant changing individual behavior. New York City's Bureau of Waste Prevention, Reuse, and Recycling produced posters in 1997 to encourage two-sided photocopying, for example.^{cxiii} In Tompkins County, the waste stream was cut dramatically by combining recycling and public education with a "pay as you throw" tax that required households to buy adhesive tags that go on garbage cans.

One result of the shift in behavior was fewer landfills. Tompkins County was able to cancel a planned new landfill because of its new policy, and switch to a regional dump instead. New York had planned to build a large garbage incinerator at the Brooklyn Navy Yard that would burn more than 3,000 tons of garbage a day, plus four more in other city boroughs. None of these were built. The City still produced 12 million tons of garbage a year in the late 1990s, but most of it went to a huge incinerator in Bridgeport, Connecticut or a regional landfill in West Virginia.

As more and more urban garbage was shipped to industrial incinerators and rural landfills, new problems emerged. One issue was transfer stations, which are factory-like buildings where the refuse in city garbage trucks and barges is moved to rail cars and tractor-trailers. Low-income neighborhoods are the most common sites for these stations and other urban facilities that have negative environmental impacts. At one time, the Red Hook neighborhood of Brooklyn had 12 waste transfer stations, 10 petroleum distributors, a trash incinerator, the Brooklyn Battery tunnel, and warehouses full of toxic waste.^{cxiv}

In 1993, an EPA research paper confirmed what community activists had long been saying: that minority communities were exposed to pollution at much higher rates than white communities. Some working-class neighborhoods had already been resisting this trend for decades. Between 1967 and 1977, for example, residents of Hoboken, New Jersey turned back a half-dozen attempts to build new oil refineries and chemical plants near the town.

On most environmental issues, the activists are middle-class or wealthy white people. But toxic waste made an exception. In Hoboken, working-class black and white leaders from a variety of ethnic backgrounds united in defense of the community. Many activists who got their start in the Civil Rights movement switched to organizing for environmental action in working class areas, and the movement soon gained a name: eco-justice.

In the mid-1990s, New York Lawyers for the Public Interest (NYLPI) began organizing low-income neighborhoods that were affected by transfer stations and other hazardous sites. New York City had 85 private waste transfer stations in 1998 that exported 24,000 tons of garbage a day. Sixty of these stations were located in neighborhoods where blacks, Latinos, and other minorities are a majority of the population. The stations brought with them unhealthy concentrations of diesel fumes, water pollution, rodents, and foul odors. Neighborhood activists argued that there was a connection between these sites and local residents' high rates of asthma.

In 1997, NYLPI helped start the Organization of Waterfront Neighborhoods, a coalition of 26 community groups from affected neighborhoods. The group quickly succeeded in blocking a proposed transfer station and holding public hearings in their neighborhoods. In 2000, it had become a player in New York's ongoing legal battle over solid waste management. "A community does not plan to fail," wrote NYLPI organizer Eddie Bautista. "It fails to plan."^{cxv}

Pesticides

"A spray like DDT makes people think of a continent arranged like a manicured garden, but you can't kick nature around that way," said John Baker, president of the National Audubon Society, in an interview published in *The New Yorker* in 1945. Over the next 20 years, the liberal use of DDT and other pesticides wreaked havoc on frogs, birds, fish, and snakes. It also poisoned the mammals that ate them, slowly and silently.

New York was the center of the movement to control pesticide use. It was *The New Yorker* that alerted the country to the pesticide crisis in 1962, when Rachel Carson published a series of articles that became the book *Silent Spring*. The Manhattan-based National Audubon Society took on the cause after Rachel Carson died in 1964, going on the record against DDT at its annual meeting in 1967. The Long Island-based Environmental Defense Fund, aided by Audubon, started the legal action that culminated in a nationwide ban on DDT. Audubon immediately began working to restore the damage. In the 1980s, the group supported a successful Cornell University program to breed and release endangered Peregrine Falcons.

State controls on pesticides were established in July 1970, and DDT was banned in the state in 1971. In 1972, the federal Insecticide, Fungicide, and Rodenticide act authorized national regulations on pesticide use, throwing the industry and activists into the arena of battling experts. In this arena, being right was not enough. You also had to be in the room, and public advocates were not guaranteed admission. In 1979, the DEC assumed authority for the 1972 federal act and began certifying some 32,000 farmers, landscapers, and other applicators. This was a win for environmental advocates, because in most states pesticides were still regulated by agriculture departments. But in 1980, at proceedings aimed at revising pesticide regulations, the DEC included representatives from pesticide manufacturers, farmers, and state agencies on its committee. But delegates from citizens' groups were not allowed, on grounds that the DEC already represented them effectively.^{cxvi}

Further regulations were placed on pesticides in 1983, and in 1987 the state banned the use of chlordane, aldrin, dieldrin, and heptachlor. In 1993, the DEC also agreed to enforce the EPA's new standards for farm worker protection.

Meanwhile, New York scientists began finding ways of controlling pests with fewer or no synthetic chemicals. Cornell University's Integrated Pest Management Support Group, based in Geneva, teaches New York farmers how to use inter-planting, targeted applications, and new plant varieties to dramatically reduce their chemical use. The technique offers farmers a way to save money while maintaining their yield and using less pesticide. No pesticide is the goal of the Northeast Organic Farmers Association, which has a New York chapter and nine local groups across the state.^{cxvii} NOFA was founded in the 1980s to certify organic farms and serve strong consumer demand for pesticide-free food. The story is another example of how state leaders have shifted their strategy from controlling pollution control to preventing it entirely.

Toxic Waste

New York's struggle to remove toxic chemicals from its soil, air, and water goes far beyond pesticides. Some toxic chemicals proved impossible to eliminate from industry. Others were dumped indiscriminately before their dangers were known. As New York's industrial jobs left in the 1970s and 1980s, the industries left the state with a multi-billion dollar cleanup project.

In a few instances, the state was able to register dramatic and rapid improvements as soon as it recognized a toxic waste problem. In 1971, for example, the DEC reported a 97 percent reduction in discharges of mercury into water because of simple controls. But victories like these were the exception. From the Niagara River to the Gowanus Canal, New Yorkers have engaged in epic battles over how to clean up their messes.

Among the state's many horror stories of toxic waste, Love Canal is the one that stands out. On August 10, 1977, *Niagara Falls Gazette* reporter Michael Brown published the first front-page story about this working-class neighborhood. Brown, who won a Pulitzer Prize for his efforts, drew the world's attention to the slimy black ooze from an abandoned dump that was coming back to the surface. A playground, basements, and back yards were sinking into potholes full of benzene and other chemicals from an abandoned Hooker Chemical plant. Miscarriages, leukemia, and childhood diseases were rampant in the neighborhood. Love Canal became a symbol of upstate New York's decline, and a warning to the world about toxic wastes.

Four pieces of federal legislation set the rules for New York's contentious cleanup. In 1976, The Toxic Substances Control Act required manufacturers to report to the EPA on the hazardous effect of their chemicals and mixtures, and authorized the EPA to restrict the use of these substances. Also in 1976, The Resource Conservation and Recovery Act established a federal hazardous waste management program but allowed states to take over the problem once they set up their own agencies. New York enacted its hazardous waste control program in 1978, just as the storm was breaking at Love Canal.

The third major piece of toxic waste legislation was Superfund, or the Comprehensive Environmental Response, Compensation, and Liability Act. This was passed in 1980 to provide some of the massive funds that were needed to clean up the nation's worst toxic waste sites, including Love Canal and 79 others in New York. By the time the state received federal approval for their program in 1986, New York's voters had approved a \$1.2 billion state Superfund to complemented the federal fund. Half of the \$1.2 billion came from fees on industry, and half from taxpayers.

The fourth plank in the legal platform was the Occupational Safety and Health Act of 1970 (OSHA). It authorized the Secretary of Labor to set health and safety standards for the workplace, and safe treatment of toxic substances became a major focus of the law. OSHA was the culmination of the Industrial Hygiene movement of the 1930s and 1940. It aroused vehement opposition from businesses that complained of arbitrary and unreasonable rules. It continues to be a lightning rod for controversy. But statistics show that it has made the workplace safer.

Reviewing three of the major toxic problems in New York -- lead, PCBs, and radioactive waste -- is a quick way to understand the difficulty and expense of this problem.

Lead: Physicians have long known that inhaling or ingesting lead particles can cause major health problems, including mental retardation in children. By the 1960s, it was clear that adding lead to gasoline was causing a pollution crisis that could be prevented.

In the early 1970s, motor vehicles poured 3,000 tons of lead a year into the air above New York City. The first New York controls on lead were not adopted until 1971, however, when the City adopted a gradual phase-out of sales of leaded gasoline in the five boroughs. Federal regulations spurred by the Clean Air Act began a national phase-out of leaded gasoline in 1973, but automobile companies fought the rules vigorously. In 1982, the Reagan administration even proposed rescinding the rules so that lead could stay in gasoline. It took a major outcry from scientists to keep the phase-out moving and three more years before 95 percent of lead was removed from the nation's fuel pumps.

As the 15-year fight raged over leaded gasoline, public concern also turned to leaded paint. The sale of most leaded paints was banned by the Consumer Product Safety Commission in 1977, but an estimated 27 million older housing units in New York had lead paint on their walls when the law took effect. In the late 1980s, about 1,000 New York City children a year were found with elevated lead levels in their blood because they ate paint chips or inhaled lead in dust. The problem was heavily concentrated in low-income neighborhoods. State and local laws now require building owners to cover lead paint and disclose its presence to new home buyers, but it will be decades before this everyday hazard goes away.

PCBs: Polychlorinated biphenyls (PCBs) were used for decades as insulating fluids in electrical equipment. They were also mixed into paints, adhesives, and dyes. Exposure to this chemical can cause skin eruptions, liver damage, and nervous system disorders. PCBs are also suspected of contributing to birth defects and cancer. When burned, they may be converted into dioxin, among the world's most toxic substances. They are also very stable chemicals that can persist for years. Therein lies the problem.

Starting in 1947, General Electric dumping more than 500,000 pounds of PCBs, along with other by-products, into the Hudson River north of Albany. The Department of Environmental Conservation finally forced GE to stop in 1975. Most of the toxins were deposited in the silt along a 40-mile stretch of river, but some were carried as far south as New York Harbor. Ever since then, Hudson River fish have been severely contaminated by PCBs. Most commercial fishing on the Hudson was banned in 1976. A national ban on PCBs was enacted in 1977. The DEC first proposed a plan to remove the contaminated sediment in 1978. But it quickly became the captive of endless hearings, court claims, and counter-claims.

General Electric has insisted that the problem of PCBs in the Hudson River is not a pressing matter, and that it is doing what needs to be done to fix the PCB problem. According to Melvin Schweiger, former Senior Engineer and head of GE's Hudson River Project, GE has spent \$165 million so far on PCB science, investigations, and studies, in addition to the costs to fix the actual PCB problem. The efforts made by GE include removing 132 tons of PCB's from the plant sites at Hudson Falls and Fort Edward, putting in approximately 230 wells to control groundwater flow, and capping 60 acres of shoreline.^{cxviii}

One result of the state's protracted public battle with GE has been the growth of several powerful environmental organizations along the Hudson. These include Riverkeeper, Scenic Hudson, and Clearwater, which was founded by folk singer Pete Seeger in 1966. Clearwater tries to improve public access to the river, improve the quality of the water, and help the Hudson provide safe food. Clearwater also conducts many festivals that attract thousands of river-lovers. Its 106-foot replica of a Hudson River sloop is the only one of its kind.^{cxix}

PCBs were also the cause of a strange disaster in Binghamton. In 1981, an electrical fire broke out in a brand-new, never-occupied state office building in the center of town. Burning PCBs in basement transformers spread dioxin-laced smoke through the building, making it uninhabitable. It took over a decade for the state to figure out what to do with the building, and several years to clean it. The building finally opened in the mid-1990s.

Radioactive waste: The disposal of radioactive waste is not as big a problem in New York as it is in other states, mainly because New York depends less on nuclear power. But radioactive waste is a potent political issue, and state lawmakers have been aggressive in attacking the problem. The DEC began regulating radioactive discharges and radioactive waste in April 1974. After newspapers published sensational stories about West Valley in Cattaraugus County, the state's only commercial high-level radioactive waste burial site, the DEC closed it in 1975. Since then, the high-level radioactive wastes produced by power plants have been stored near the plants. Low-level wastes have been strictly regulated, and the state has monitored both processes. In 1982, the state Health Department took over programs that measure radiation levels in the environment.

Beginning with Love Canal, New Yorkers have learned a hard lesson: the short-term profit gained by abandoning hazardous wastes has to be repaid, over and over again, in cleanup costs. In 2000, the state's Superfund ran out of money after tackling 401 of the state's estimated 864 inactive hazardous waste sites. Keeping Superfund going will cost the state from \$130 million to \$250 million a year, with no end in sight. Illicit dumping of hazardous wastes is aggressively prosecuted by the DEC, but it is still a problem, particularly among small manufacturers in New York City.

Today, New Yorkers are among the nation's most knowledgeable experts on the subject of toxic waste. Lois Gibbs, the Niagara Falls housewife who led the protests of Love Canal residents, has become the nation's leading citizen activist on toxic wastes. As chair of the Center for Health, Environment and Justice, located in Falls Church, Virginia, Gibbs provides advice and support to activists around the country.^{cxx}

Clean Water

On July 1, 1976, an oil barge hit a pylon of the Tappan Zee Bridge and dumped 50,000 gallons of number 2 oil into the Hudson River. Given the indignities the river had already endured, the oil spill wasn't much. But it was the last straw for New Yorkers who were tired of living next to fouled water. Over the next 25 years, the state and citizen's groups made significant progress in cleaning it up.

New York's first clean water legislation was passed in the 19th Century, and several significant efforts were made before 1970 to protect drinking water supplies and regulate sewage. In 1965, for example, Nelson Rockefeller's Pure Waters Bond Act released \$300 million in state funds for wastewater treatment – and in 1965, \$300 million was a lot of money. The process gained a great deal more money and power in 1972, when the Federal Water Pollution Control Amendments, known as the Clean Water Act, set a national water policy for the first time. The act set effluent limits for sewage plants, established the National Pollution Discharge Elimination System, and financed wastewater treatment plants. Federal standards were actually relaxed in amendments to the Clean Water Act in 1977, but New York went in the opposite direction: the state passed 11 clean-water bills in the 1970s, and another 12 in the 1980s.^{cxxi}

In a 1996 bond act, voters authorized a major expansion of clean water initiatives, including \$790 million for wastewater and habitat restoration and \$355 million for safe drinking water. Here are three examples of New York's innovative solutions to water problems.

New York City Sewage: New York City has had sewage treatment plants since the 1930s, but until 1992 its sludge was dumped into the ocean. The North River Wastewater Treatment Plant, on the Hudson River in Manhattan's upper West Side, has helped to change that. Since it opened in 1986, the massive plant has treated about 1.4 billion gallons of sewage a day, including much of the raw sewage that once poured into the river during storm overflows. The plant has a state park built on top of its treatment tanks, including three swimming pools, a restaurant, and sports fields. To replace ocean dumping, the city also developed a new process so that it could sell treated sludge, or "biosolids," as agricultural fertilizer.

Drinking water: In 1989, the EPA issued rules requiring most municipal drinking water supplies to install expensive filtration systems. The drinking water supplies in New York City, Rochester, Syracuse, and other cities are not filtered, and city leaders were eager to avoid the bill. The EPA rules said that no filtration system would be required if a municipality could demonstrate that it had a stringent program to protect its watersheds, and if its water met high standards.

After years of hard negotiation with several dozen townships in the Catskills and Hudson Valley, New York City met those standards with a voluntary agreement signed on January 21, 1997. The agreement included plans to update nine upstate sewage plants, and to renovate dams and reservoirs. It also included a \$35 million Agricultural Program designed to preserve the watershed region's farm economy. On a smaller scale, the City of Syracuse worked with the Finger Lakes Land Trust to safeguard lands that drained into Skaeneateles Lake, its primary drinking water source. In the future, voluntary agreements may also be used to safeguard the watersheds of Hemlock and Canadice Lakes, which supply drinking water to Rochester.

Watershed protection: A statewide movement that began in the 1970s has permanently protected thousands of acres of sensitive coastal areas and wetlands. Protecting parkland

has always been popular with the public, but the movement really picked up speed in the 1990s when setting aside wetlands and coastal areas proved cost-effective as well.

Jamaica Bay lies between Brooklyn and Coney Island, is one of the last undeveloped stretches of New York City's 578-mile coastline. The 13,000-acre bay, which is home to more than 300 species of birds, was handed over to the National Parks Service in 1972 and re-named the Gateway National Recreation Area. The following year, Fire Island became a National Seashore and was saved from housing and road development. Storm damage to beach houses elsewhere in Long Island showed the wisdom of preventing construction on a sand bar.

In 1972, the federal Coastal Zone Management Act encouraged states to develop coastal areas only where their impacts would not be harmful to the environment. In 1980, the DEC responded by submitting a management program for the Great Lakes, St. Lawrence River, Hudson River, and the state's marine coast. In 1982, it also commissioned a survey to determine the impact of acid rain on Adirondack lakes. In 1984, the state began issuing water quality reports every two years. In 1993, it issued a \$2.7 million grant to begin a long, difficult clean up of Onondaga Lake. And in 1994, it approved a comprehensive plan for the clean up of Long Island Sound.

One of the most effective state expenditures for clean water came in 1993, and then the DEC helped fund Water Quality Coordinating Committees in 57 New York counties. In the 1990s, citizens' watershed organizations like the Seneca Pure Waters Association have become effective watchdogs of water quality across the state.

Clean Air

Giving an order doesn't necessarily make something happen. This is the lesson of the federal Clean Air Act of 1970, which required the nation to set and meet air quality standards. Revised in 1977 and 1990, this law guided the process that eliminated lead from gasoline, cut automotive emissions of carbon monoxide and other pollutants, and cleaned up the nation's smokestacks. But what it really did was set the rules for a battle that is now entering its fourth decade. One of the reasons this battle has been so slow is that it often involves automobiles, and Americans are loath to give up their cars.

The Clean Air Act set general standards. It was filled in by a series of state and federal laws and amendments. But its provisions were often not enforced until someone insisted on it. In 1973, a Clean Air Plan was drafted for New York City. The Plan sat on a shelf until 1975, when lawyers Ross Sandler and David Schoenbrod filed suit on behalf of several environmental groups to enforce it. The legal fight went all the way to the Supreme Court, where it was decided in favor of the plaintiffs. The compromise plan established bus lanes and strengthened the enforcement of traffic and parking laws. Since the plan was put in place, carbon monoxide levels on New York streets have declined.

The list of clean air laws is exceptionally long. Here are a few highlights: in 1971, a state law established emission standards for industrial plants. In 1972, eight significant

pollutants were added to the list of chemicals used to measure air quality standards. In 1976, the DEC controlled the use of aerosol cans containing chlorofluorocarbons (CFCs), which had been shown to damage the planet's ozone layer. In 1983, cowls were added to gasoline pumps in New York City to keep vapor from escaping into the air. In 1985, municipal solid waste incinerators were regulated. In 1986, the state inherited a long list of duties previously reserved by Washington.

New York's air is measurably cleaner because of these laws. But it isn't clean enough. This was brought home in 1988, when hot summer weather contributed to heavy atmospheric ozone and unhealthy breathing conditions in several New York cities. So the legal beat went on. In 1990, New York adopted California's automobile emission standards, by far the strictest in the nation, for all cars sold in the state. Also in 1990, further amendments to the Clean Air Act required major polluters to get permits before they could release chemicals into the air. These were combined with several "market-based" provisions, including "pollution allowances" that can be bought and sold and credits to industries that meet certain standards.

Despite these efforts, one of the state's most serious air pollution problems seems to be getting worse. Acid rain, which is caused by fine particles from Midwestern smokestacks wafting northward, is having a major negative impact statewide, killing plant, fish, and animals. Acid rain's component chemicals were controlled within New York by a 1984 law. But the problem lies in Ohio, Michigan, and other states where environmental traditions are not as strong as they are in New York. For decades, the state has been unable to force its neighbors to stop. According to Attorney General Elliot Spitzer, an estimated one-fifth of lakes in the Adirondacks are too acidic to support life.

Another reason for the lack of progress in stopping acid rain is the complexity of the issue, which has provided many points at which scientific questions could be disputed. Beginning in 1978, power companies, smelters, and other acid rain generators adopted the strategy of continually calling for more scientific research. Once scientific research reached a consensus that acid rain was harmful and should be controlled, the industries switched to a public-relations campaign against the scientists.^{cxxii}

In 1999, Attorney General Spitzer filed suit against 17 older coal-fired power plants in the Midwest, claiming that they had made major modifications without obtaining the necessary permits. In May 2000, he also gave notice to file suit against seven coal-fired plants in New York.

Wildlife and open space

Ecology, which for decades had been a neglected stepchild of the sciences, finally got some respect in the 1970s. Ecological terms like "biodiversity" and "carrying capacity" entered the ordinary person's reading list. Scientists began using ecological management techniques to restore damaged areas and re-introduce wild animals to areas where they had been wiped out. Combined with these trends, New York's forest cover increased steadily through the last quarter of the 20th century. There was rapid growth in public use

and appreciation of natural areas. Responding to the increased interest, the state embarked on a major expansion of land holdings in the 1990s.

In July 1971, New York's first state endangered animal protection law was enacted. Two years later, the federal Endangered Species Act passed, and in 1974 endangered plants were added to the list. Protecting these animals fell to the DEC, and they came upon an innovative way of finding the money. In 1982, New York state tax returns began including a "return a gift to wildlife" feature, which allows taxpayers to make voluntary payments into a wildlife protection fund. In 1998, the feature raised \$600,000.

It was comparatively easy to save endangered species in most of New York, because large sections of the state have smaller human populations in 2000 than they had in 1970. Outside of the state's metropolitan corridors, former farms are turning back into forests, the population is aging, and human impact on the land is stable or declining. Open space protection is therefore different in New York than it is in California or Florida. Advocates here had an opportunity to protect entire ecosystems west of the Hudson and north of Albany with relatively little public opposition, and at a relatively low cost.

The DEC used its wildlife funds in a variety of ways, including the re-introduction of many species wiped out early in the 20th century. Fishers were released in the Catskills in 1976. Wild turkeys were released across the state in 1979 and have staged a stunning comeback; they are now a popular game bird for hunters, and are common from the Alleghenies to Long Island. In 1980, the DEC began work on a comprehensive breeding bird atlas of New York State, with the assistance of Cornell University's Lab of Ornithology. The atlas has become indispensable in environmental analyses and planning. In 1989, a 13-year program concluded to re-introduce bald eagles to New York when 10 nesting pairs were confirmed in the state. In 1992, Lake Sturgeon were re-introduced in the Oswegatchie and Grass rivers of the Adirondacks, and osprey nests were placed in the Tonawanda Wildlife Management Area. In 1994, the number of nesting bald eagle pairs had increased to 23.

Important wildlife habitat was protected statewide in 1971, when Agricultural Districts were created to protect rural farmland from developers. But the real push to protect habitat came from outdoor enthusiasts, who became a major political force in New York in the 1970s. In 1975, the state added 1,000 miles of rivers in the Adirondacks to the national wild and scenic rivers program. Also in 1975, Theodore Hullar and other New York environmentalists proposed that the Delaware Water Gap become a park instead of being flooded by a dam on Tocks Island. Eventually that stretch of the Delaware was also added to the scenic rivers system, and the dam was stopped. The New York/New Jersey Trails Commission, the Finger Lakes Trail Association, and other hiking clubs also weighed in whenever open space became available along their routes.

A major advance came in June 1992, when the DEC submitted the first of its annual Open Space Plans to the governor. Open space plans include lists of lands that the state will acquire if and when they become available. With funds from Bond Acts passed in

1986 and 1996, the state gained the money it needed. As a result, many in-holdings in state forests were consolidated, wetlands were saved, and forests protected.

Adirondacks

A politician who wants to dodge a problem often appoints a commission to study the problem and release a report. In 1968, Nelson Rockefeller appointed the Temporary Study Commission on the Future of the Adirondacks. The problem was the use of privately owned land within the blue line, which comprises the majority of the Park. Development pressure was increasing. In 1967, the Great Northern Corporation began selling a subdivision of 300 building lots near Indian Lake, with some lots as small as one-quarter of an acre. The Governor's brother, Laurence Rockefeller, had already proposed turning the core of the state Park into a National Park, with the tacit assumption that land outside the National Park would be developed with no special requirements. The National Park proposal did not fly, but it got people excited – and in the Adirondacks, it re-opened old wounds about the relationship between state government, old money, and working people who live on the land.

Regulating the private land in a public park was a mess that could have been solved in 1894, when the park was created, or 1915, when it was reaffirmed. But politicians sidestepped the problem then. Rockefeller might also have been sidestepping it in 1968. But if he was, he had misjudged Harold Hochschild.

Hochschild was a millionaire businessman whose family had owned a great camp on Blue Mountain Lake since 1904. He later became the founder and main benefactor of the Adirondack Museum, one of the nation's finest regional museums, also in Blue Mountain Lake. He was appointed to the study commission in 1968, and things went as expected, with little action, until he assumed the Chairman's position in 1970. Rockefeller asked the Commission to recommend ways to assure that development on private land [within the blue line] is consistent with the long-range well-being of the area." Their report, released in December 1970, pulled no punches. "Unguided development on the 3,500,000 acres of private land will destroy the character of the entire Park if immediate action is not taken." The commission recommended further expansion of the Park's boundaries, to more than 5.9 million acres, and it also recommended that the legislature establish an Adirondack Park Agency (APA) to develop regional zoning for private land.

The Hochschild commission report fell squarely within the tradition of wealthy landowners defending an unspoiled landscape from entrepreneurs. In the 19th century, the despoilers were loggers and railroad men; in the 20th and 21st century, they are housing developers. Small businesses and local workers complained that the report did not represent their interests, but it was a compelling argument outside the Blue Line. In June 1971, Rockefeller's bill that established the APA was passed into law. Rockefeller approved the Agency's master plan for state-owned land in 1972. In 1973, just before he left to become Vice-President, Rockefeller approved the agency's Private Land Use and Development Plan.

The Private Land plan color-coded every acre of land within the blue line and assigned it a permissible level of development. In most of the private land (53 percent), no more than ten housing units per square mile could be built, on an average lot size of 64 acres. The overall goal was to protect the park's character as a forested place. The immediate outcome was outrage from local landowners that felt that their rights had been stolen. In 1975, speakers at rallies held by the League for Adirondack Citizens Rights called the APA a "fascist bureaucracy" and burned Agency members in effigy.

The long tradition of local opposition to state control the Adirondacks has continued unabated since the mid-Nineteenth Century. It flared up again during the formation of the APA, and continues into the present day. In December 1989, when the DEC closed the road to Crane Pond, local residents removed the barriers to re-gain access to their traditional fishing spots. When environmentalists tried to put the barriers back in place, a scuffle broke out that was broadcast nationally on the program "60 Minutes."

The APA did put regulations in place that controlled some housing development in the Adirondacks. But through the 1970s and 1980s, conservationists warned that developments perfectly legal under the APA guidelines were still eroding the forested character of the park. In 1989, after a powerful article in the New York Times called attention to the Adirondack building boom, Governor Cuomo appointed a new commission, called the Commission on the Adirondacks in the Twenty-First Century, to revisit the problem. In 1990, the commission reiterated what Hochschild had said twenty years earlier: that development was threatening the character of the Park. This time, opposition to the report became the rallying cry for those who believed in home rule for the Adirondacks. The Adirondack Fairness Commission, funded by local businesses, claimed that evidence of a crisis had been fabricated. The Adirondack Solidarity Alliance organized a "freedom drive" that created gridlock on the Northway. The report was dead on arrival, and housing development continued in the Adirondacks through the 1990s.^{cxxiii}

Meanwhile, the state pursued opportunities to add large sections of the Park to its holdings through acquisitions and easements. In 1998, the state purchased 14,800 acres of prime lake country, including Little Tupper Lake, from the Whitney family for more than \$100 million. Several other large parcels are under consideration in 2000. The Sierra Club and other groups are promoting the idea of a Great Oswegatchie Wilderness, a 400,000-acre swath of state land in the western central part of the park. The vision of a great unbroken forest lives on.^{cxxiv}

Conclusion

In a few years, it will be impossible to write a paper about "environmental affairs" as a separate subject, because this topic is rapidly being integrated into every aspect of private and public life. Organized groups run the gamut from one extreme to the other. The Cenozoic Society of Canton, New York wants to remove all human influences from millions of acres in the North Country.^{cxxv} The Property Rights Foundation of America in Stony Creek, a few miles away, argues that land protection groups are part of a global

conspiracy to install world government, led by the United Nations.^{cxxvi} Everyone in between is seeking some kind of balance between the environment and economic growth.

The vast majority of New Yorkers view environmental affairs comfortably, as one concern among the many concerns of daily living. New York's state and federal legislators glean high ratings from the League of Conservation Voters and the Environmental Protection Lobby year after year because the voters demand it. Voters regularly approve bond issues that contribute to the state's high taxes, as long as the debt finances new water treatment plants and new parks. What has changed is size, as the state's population has grown from 340,000 in 1790 to more than 18 million in 2000. There have also been changes in scope, as New York has passed from being an agricultural empire to an industrial powerhouse and, in 2000, a capital of global finance. But the will of the people has not changed. Every time they are asked to pay the price for clean air, clean water, and open space, New Yorkers pay it willingly.

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ⁱⁱⁱ *Statistical Abstract of the United States 1997*, tables 405, 432.

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- ^{lxiii} Wadsworth, Bruce, and contributors, 1996. *With Wilderness At Heart: A Short History of the Adirondack Mountain Club*. Adirondack Mountain Club, Lake George, New York, p. 11, 23.
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- ^{lxv} Information at <<http://www.tws.org>>.
- ^{lxvi} Quoted in Graham, p. 173.
- ^{lxvii} Graham, p. 197-207.
- ^{lxviii} Graham, Frank Jr., 1990. *The Audubon Ark*. Alfred A. Knopf, New York; "From Outrage to Action: the Story of the National Audubon Society," pamphlet produced by the National Audubon Society, New York, NY.
- ^{lxix} Graham, *Ark*, p. 102.
- ^{lxx} Quoted in Nash, Roderick, 19XX. *The Rights of Nature*. Yale University Press, NewHaven, p. 60.
- ^{lxxi} Quoted in Worster, Donald, 19XX. *Nature's Economy*. Sierra Club Books, San Francisco, p. 276
- ^{lxxii} "50 Years of Saving Great Places," *Nature Conservancy*, January-February 2001, p. 21.
- ^{lxxiii} *Ibid*, p. 12.
- ^{lxxiv} *Ibid*, p. 25.
- ^{lxxv} Hays, Samuel P., 1972. *Conservation and the Gospel of Efficiency*. New York, Atheneum Press, p. 144.
- ^{lxxvi} Dorf, Philip, 19XX. *Liberty Hyde Bailey: An Informal Biography*. Cornell University Press, Ithaca NY, p. 109.
- ^{lxxvii} *Ibid.*, p. 167, 214; Nash, *The Rights of Nature*, p. 57.
- ^{lxxviii} Organizations supervised by the Division of Parks included the State Council of Parks; the New York State Reservation at Niagara; the Palisades International Park; the Allegheny State Park; the Finger Lakes State Parks Commission; the Long Island State Park Commission; the Taconic and Central New York State Parks Commissions; and the functions of the American Scenic and Historic Preservation Society, including Letchworth State Park. In 2000, some of these organizations continued to operate as regional divisions of the State Office of Parks, Recreation, and Historic Preservation.
- ^{lxxix} Shabecoff, Philip, 1993. *A Fierce Green Fire: The American Environmental Movement*. Hill and Wang, New York City, p. 80.
- ^{lxxx} "Origins of the Finger Lakes National Forest," pamphlet distributed by the US Forest Service: contact (607) 546-4470.
- ^{lxxxii} More information: <<http://www.fws.gov>>.
- ^{lxxxii} Donald B. Dodd, editor, 1993. *Historical Statistics of the States of the United States: Two Centuries of the Census, 1790-1990*. Greenwood Press, Westport Connecticut, p. 233-4.
- ^{lxxxiii} "State Forests Outside the Catskill and Adirondack Parks," New York State Department of Environmental Protection brochure LF P-237 (4/87).
- ^{lxxxiv} *Historical Statistics of the United States: Colonial Times to 1970*, House document no. 93-78, 1975; Series B, 116-125.
- ^{lxxxv} Nelson A. Rockefeller Institute of Government, 1996. *The Department of Environmental Conservation: A 25th Anniversary Review*. Nelson A. Rockefeller Institute of Government, Albany, NY. p. 166.
- ^{lxxxvi} More information: <<http://www.kab.org>>.
- ^{lxxxvii} Shabecoff, Philip, 1993. *A Fierce Green Fire: The American Environmental Movement*. Hill and Wang, New York, p. 113.
- ^{lxxxviii} Stone, I.F., 1970. "How Earth Day Was Polluted," in *The I.F. Stone's Weekly Reader*. Random House, New York, p. 3.
- ^{lxxxix} *The Gallup Report*, June 1989, No. 285, and periodic updates.
- ^{xc} Hays, Samuel P., 1987. *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985*. Cambridge University Press, Cambridge, p. 10

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- ^{xc}i Talbot, Allan R., 1972. *Power Along The Hudson: The Storm King Case and the Birth of Environmentalism*. E.P. Dutton and Co., New York, p. 131.
- ^{xc}ii Shabecoff, p. 134
- ^{xc}iii Web page: <<http://www.nrdc.org>>
- ^{xc}iv Web page: <http://www.environmentaldefense.org>; also Rogers, Marion Lane, *Acorn Days: The Environmental Defense Fund and How It Grew*. Environmental Defense Fund, New York, 1970.
- ^{xc}v Graham, Frank Jr., 1990. *The Audubon Ark*. Alfred P. Knopf, New York, p. 241.
- ^{xc}vi Web page: <<http://www.sierraclub.org/chapters/ny.htm>> Internal politics: Sierra Atlantic, Fall 2000, p. 20-21.
- ^{xc}vii Web page: <<http://www.audubon.org/chapter/ny>>. All members of the Federation of New York State Bird Clubs are listed at <<http://www.birds.cornell.edu/fnysbc/clubsalf.htm>>.
- ^{xc}viii Listing is at <<http://www.lta.org/map/NY.htm>>
- ^{xc}ix Wadsworth, Bruce, and contributors, 1997. *With Wilderness At Heart: A Short History of the Adirondack Mountain Club*. Adirondack Mountain Club, Lake George, NY, p. 35.
- ^c Web pages: <<http://www.tu.org/xp5/chsearch.view>>; <http://www.ducks.org/conservation/longisland_program.asp>.
- ^{ci} St. Lawrence EMC Web page: <<http://www.co.st-lawrence.ny.us/planning/sld001.htm>>.
- ^{cii} Figures from Environmental Data Research Institute, Rochester, NY, quoted in Arnold, Ron and Gottlieb, Alan, 1994. *Trashing the Economy: How Runaway Environmentalism is Wrecking America*, Free Enterprise Press, Bellevue, Washington.
- ^{ciii} Web page: <<http://www.ega.org>>
- ^{civ} Talbot, p. 155; Hays, p. 182.
- ^{cv} Web page: <<http://www.sirensongs.com>>
- ^{cvi} Quoted in Wild, Peter, 1986. *Pioneer Conservationist of Eastern America*. Mountain Press Publishing company, Missoula, p. 215.
- ^{cvi} Web page: <http://www.informinc.org>.
- ^{cvi} Friedman, Milton, 1980. *Free To Choose*. Harcourt, Brace, Jovanovich, New York.
- ^{cix} Commoner, Barry, "Pollution Prevention: The Source of an Ethical Foundation for Sustainable Development," published online at <http://www.czp.cuni.cz/values/citanka/barry_commoner.htm>.
- ^{cx} Much of the information on the DEC and state laws in this chapter is taken from *The Department of Environmental Conservation: A 25th Anniversary Review*, Nelson A. Rockefeller Institute of Government, February 1996.
- ^{cx}i Bautista, Eddie, "Garbage Wars: The Struggle for Waterfront Justice," New York Lawyers for the Public Interest, May 1998.
- ^{cx}ii Statistics at <<http://www.epa.gov/epaoswer/non-hw/muncpl/reduce.htm#recycle>>
- ^{cx}iii <<http://www.ci.nyc.ny.us/html/dos/html/annual97/ar7t3380.html>>
- ^{cx}iv Bautista, Eddie, p. 2
- ^{cx}v *ibid.*, p. 3
- ^{cx}vi Hays, Samuel P., 1987, p. 423.
- ^{cx}vii <http://ny.nofa.org>
- ^{cx}viii <http://www.marist.edu/summerscholars/99/env/index.htm>
- ^{cx}ix <http://www.clearwater.org>
- ^{cx}x <http://www.chej.org>
- ^{cx}xi *The Department of Environmental Conservation: A 25th Anniversary Review*, p. 210-215.
- ^{cx}xii Hays, *Beauty, Health, and Permanence*, p. 351.
- ^{cx}xiii Terrie, Philip, 1997. *Contested Terrain*. P. 168-78.
- ^{cx}xiv See Adirondack Explorer, summer 2000 special supplement, for descriptions of recent and potential acquisitions.
- ^{cx}xv Cenozoic Society, 68 Riverside Drive #1, Canton NY 13617.
- ^{cx}xvi Property Rights Foundation of America, PO Box 75, Stony Creek NY 12878.

