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NEW YORK

New York state may have more undocumented old growth than any other state east of the Mississippi. Researchers, including Michael Kudish, Robert Leverett, and Barbara McMartin are working to close the gap in our knowledge. Furthermore, organizations are rising to the challenge. Since 1989 the Western New York Old Growth Survey Team, led by Bruce Kershner, has mapped numerous sites in western New York. An Eastern New York Old Growth Survey Team was formed in 2001 and a Central Team, in 2002. The members of these groups teach about and defend as well as discover old growth. For instance, the Western Team, worked with other organizations to stop logging in Zoar Valley and Allegany State Park, and Thomas Howard, now of the Central Team, has led the fight to preserve old growth in and around Syracuse. In 2002 a New York Old Growth Forest Association, which brings together the existing teams and plans to sponsor others, was founded.

This chapter presents a sampling rather than an exhaustive list of the sites in New York that have been described as old growth. One reason is that the sites below 40 acres in extent are too numerous for complete coverage. Another is that the New York Old Growth Forest Association uses the terms “ancient forest” and “old growth” for some second-growth forests as well as for primary or first forests. Their site descriptions do not always make clear whether a stand is primary or secondary. In trying to avoid presenting second growth, which is outside our definition of old growth, we may have inadvertently excluded some old-growth sites.

Franz Seischab and John M. Bernard have studied the Pitch Pine communities in New York state. Seischab wrote to us that the “only true old growth pitch pine site” that they examined was a site that Abrams and Orwig analyzed--a 12-acre (5 ha) rock outcrop area along the southwest boundary of **Minnewaska State Park** outside New Paltz, New York (Seischab 2001). Pitch Pine at the site were up to 320 years old, which “may represent one of the oldest intact examples of this forest type.” The Pitch Pine, 88% of all sampled trees, exhibited continuous recruitment since the late 1600s. Recruitment of Black Gum and Chestnut Oak began after 1830 (Abrams and Orwig 1995).

Seischab also noted that additional sites have probably been continuously forested and never subjected to logging. He mentioned the existence of such Pitch Pine sites at **Flat Rock** in Altona (Clinton County) and in **Mohonk Preserve** and in Minnewaska State Park, “shallow to bedrock sites with trees of little commercial value” (Seischab 1998). E. Russell believes that between 1800 and today almost all forests in the Shawangunk Mountains were logged, but that some Pitch Pine and Chestnut Oak on ridges and Eastern Hemlock on talus slopes were spared. The problem when it comes to describing Pitch Pine in the Shawangunks as old growth, Seischab points out, is that the sites burned. The fires raise the question of what is old growth, since humans caused many of them. Furthermore, for researchers who believe that old growth should be composed of old trees, even natural-origin fires pose a problem. To judge whether a site is old growth you would need to know the age of root stocks rather than of above-ground stems, Seischab says, and he does not know of any study successfully determining the age of root stock (Seischab 1998).

Neil Pederson has discovered three sites in eastern New York that have old trees and are of interest from an ecological standpoint but that he does not characterize as old growth, because they show signs of having been logged or grazed by livestock or both. All are at least 40 acres in size. They are **Prospect Mountain**, east of Lake George (Warren County): an oak-hickory stand with White Oak to 313 years in age and Shagbark Hickory to around 180 years; **RamsHorn-Livingston Sanctuary** (Greene County): the largest tidal swamp forest on the Hudson with Swamp White Oak, Northern White-cedar, and Black Gum, each species with trees close to or more than 200 years old; **Shushan White Spruce Outlier** (Washington County): a large boreal swamp forest with the southernmost known stand of White Spruce in New York State. The oldest spruce is 185 years in age, as is the oldest White Pine (Pederson 2000 and 2001).

Examples of small areas of old growth, grouped by region, follow.

WEST. Areas include **Knox Farm State Park** (Erie County): 28 acres of old growth in three groves that were preserved on a wealthy estate (Kershner 2002); **Bentley Woods** (Monroe County): 23 acres of old growth, including a wetland and a glacial esker with Red, White, and Black Oak (Keister 1993, Kershner 1990, Kershner 2002); **Lilydale Grove** (Chautauqua County): 20 acres of old growth with trees 200-250 years old, including large Northern Red Oak, Eastern White Pine, and Black Cherry, owned by the Lilydale Spiritualist Assembly (Kershner and Leverett 2002); **Mossy Point** (Erie County): 20 acres of old growth along the 200-foot deep gorge of Hunters Creek, part privately owned and unprotected and part in a nature preserve owned by the town of Evans (Kershner 2002); **Pfeiffer Nature Center** (Cattaraugus County): approximately 20 acres of old growth surrounded by mature forest within a 188-acre non-profit environmental education center (Kershner and Leverett 2002); **Long Point State Park** (Chautauqua County): up to 15-20 acres of diverse old growth along the north shore of Chatauqua Lake, discovered by Jim Battaglia and Bruce Kershner (Kershner 2003); **Panama Rocks** (Chautauqua County): 15 acres of twisted trees growing amid boulders, privately owned (Kershner and Leverett 2002); **Reynolds Gully** (Livingston County): 15 acres of old-growth Eastern Hemlock-Yellow Birch forest at the bottom of a rugged gorge, partly owned by the City of Rochester and partly privately owned (Kershner 2002); **Tryon Park** (Monroe County): some 25 acres of old growth, including oaks, beech, Sweet Birch, and Tulip Tree, within a park owned by the City of Rochester (Kershner 2002); **Irondequoit Bluff**, western New York (Monroe County): 15 acres of old growth in a ravine cutting down to the shore of Irondequoit Bay, Lake Ontario, apparently owned collectively by homeowners in a development above the bay (Kershner 2002); **Whispering Brook** (Ontario County): 15 apparently unlogged acres of White Ash-Northern Red Oak forest within the Cutler Reservation Boy Scout Camp (Kershner 2002); **Washington Woods Park** (Monroe County): apparently unlogged Black, Northern Red, and White Oaks with other species comprising a 12-acre park owned by the City of Rochester (Kershner 2002).

In addition to the Niagara Gorge (described below), areas with ancient trees on cliffs include **Genessee Gorge** (Monroe County), undetermined but small acreage of Eastern Red-cedar in the gorge of the Genessee River where it cuts through the City of Rochester (Monroe County).

CENTRAL. Jonathan R. Mawdsley has compiled a list of old-growth sites in Tompkins County, along with a statement of the criteria used in compiling the list. "Tompkins County has thousands of acres of forest that have never been completely cleared for agriculture and that have a species composition close to that of the presettlement forests of central New York. The vast majority of these primary forest stands have been extensively and continuously logged since

European settlement, and forests that exhibit all or most of the stand characteristics associated with old-growth conditions are quite rare. In compiling the following list, we have included all known sites that have a) live, standing trees in excess of 200 years in age and b) minimal signs of human disturbance, and c) that exhibit most or all of the stand characteristics typical of eastern old-growth forests.” “European settlement began in Tompkins County in the 1790s.”

Only one site on Mawdsley’s list, Six Mile Creek Old Growth, is greater than 40 acres. We present that site below and include most of the smaller sites here, in the introduction. The sites include **Taughannock Gorge** (Taughannock Falls State Park), approximately 30 acres of unlogged mesic forest, with small but apparently old trees, on a very steep talus slope (Kershner and Leverett [2003] describe twisted Eastern Red-cedar on 400-foot-high cliffs in the same park); **Stewart Park Woods/Fuertes Bird Sanctuary** (Ithaca): a 22.5-acre remnant of a once-extensive floodplain forest at the south end of Cayuga Lake, probably had some logging in the past but shows no evidence today, owned by the City of Ithaca; **Smith Woods** (Village of Trumansburg): a 42-acre former farm woodlot, half of which has few signs of human impact and is characterized by enormous trees of the dominant species including basswood, beech, Cucumber Magnolia, Sugar Maple, and Tulip Tree, as of 1988 owned by the Village of Trumansburg (described by Kershner and Leverett [2002] as a combination of many second-growth trees and a few old-growth trees; by the New York Old Growth Forest Association’s Web Site as “second growth,” and by Marks et al. [1999] as “a well-developed, mesophytic, old growth stand”); **Middaugh Woods** (Village of Brooktondale): as of 1988, 20 acres of old growth with White Pine over 100’ and basswood to 110’, within a privately owned 80-acre forested tract in a creek bottom; **Murphy Tract/ Fischer Old-Growth Forest** (Town of Newfield): 18 acres of old growth on a steep slope, salvage logged for American Chestnut but otherwise unlogged, owned by Cornell University; **Palmer Woods** (Village of Cayuga Heights): 25 acres of oak forest, of which 13 are old growth, unlogged except for chestnut salvage, owned by Cornell University; **Fall Creek Hemlock Grove/Behrends Woods Hemlock Grove** (Cornell Plantations nature preserve): 10 acres, which, according to records were left alone, within a larger forested area that Cornell’s now-defunct Forestry Department used for experimentation; **Lick Brook** (Ithaca): approximately 10 acres of Eastern Hemlock and beech on north-facing slopes and White Oak, Chestnut Oak, Eastern Red-cedar on south-facing slopes within an extremely steep gorge that has probably had minimal logging, owned by the Finger Lakes Land Trust (northern half) and Cornell University (southern half); **Beebe Lake Woods** (Cornell University’s central campus): 10 acres of old growth, from which trees were undoubtedly removed in the early 1800s, dominated by Eastern Hemlock, White Pine, White Oak, and Northern Red Oak within a 40-acre woods owned by Cornell University (Kershner and Leverett [2002] describe two very small remnants of old growth, one on the south slope and one above the northeast slope at Beebe Lake); **Mount Pleasant** (summit of Mount Pleasant): approximately 25 acres of old growth that was once a former farm woodlot, owned by Cornell University (Mawdsley 1998).

Other small sites in central New York include **Curtiss-Gale State Wildlife Management Area** (Oswego County): 20 acres of beech-maple-basswood forest with trees at least 200-250 years in age, owned and protected by the New York State Department of Environmental Conservation (Howard 2002); **Liverpool School Maple Grove** (Onondaga County): 15 acres of beech-maple-basswood forest owned by the Liverpool Central School District and potentially threatened (Howard 2002); **Nelson Swamp** (Onondaga County): 12 acres of old growth within a 2000-acre cedar swamp, 574 acres of which, including the old growth, are owned by the State of New York (Reilly 1997); **Wizard of Oz Memorial Grove**, North Syracuse (Onondaga County):

7 acres of oaks and Red Maple over 200 years in age, owned by the North Syracuse Central School District and in need of permanent protection (The grove probably inspired L. Frank Baum's Great Forest of Oz, as he grew up near it.) (Howard 2002); **Selkirk Shores State Park** (Oswego County): 8 acres of beech-maple-basswood, owned by the State of New York (Howard 2002); and **North Syracuse Cemetery Oak Grove** (Onondaga County): 1.5 acres of oaks and Red Maple over 200 years in age, owned by the North Syracuse Cemetery Association and in need of permanent protection (Howard 2002).

NORTHEAST. Areas include **Saratoga Spa State Park** (Saratoga County): some 20 plus acres of old growth with White Oak, Red Maple, Sweet Birch, hemlock, and beech within the 2033-acre State Park (Yarrow 2002, Stewart 2003); and, in Adirondack State Park, **Three Ponds Mountain Old Growth** (Hamilton County): within Silver Lake Wilderness 20 acres of "huge" Sugar Maple, Yellow Birch, and Eastern Hemlock (Davis 1988); **The Elders Grove** (Hamilton County): a 10- to 20-acre stand of old-growth White Pine, more than 150 feet tall, on state land adjacent to Paul Smith's College (NYOGFA 2002, Kudish 2003). **In 2009 Paul Smith's logged its forest up to the boundary line and disrupted the trail between the old growth and the road, Howard Stoner reports. Stoner characterizes the old growth as 10-12 acres in extent and writes that he has measured the tallest White Pine at 158 feet (ENTS list, 12.2.09).

SOUTHEAST. Areas include **Shu Swamp** (Nassau County): 25-30 acres of old-growth Tulip Tree, Black Gum, American Beech, and other species within the 64-acre Charles T. Church Nature Sanctuary (Kershner and Leverett 2002); **Ironwood Hill Park** (Manhattan): 25 acres of possible old-growth forest with Tulip Trees and oaks (Kershner and Leverett 2002); **Halle Ravine Preserve** (Westchester County): 20 to 25 acres of old growth, dominated by hemlock dying because of the adelgid, within a steep ravine in the 38-acre preserve owned by The Nature Conservancy (Kershner and Leverett 2002, Levy 2003); **Greentree Foundation Property**, Manhasset, Long Island (Queens): 20 acres of old growth, with oaks, beech, Sweet Birch, Sugar Maple, Tulip Tree, Cucumber Magnolia, and beech 200 to 300 years old, within the 430-acre property, formerly the estate of the Whitney family (Kershner 2002); **Tiffany Creek County Preserve** (Nassau County): 20 acres of old growth in a preserve purchased in 1992 from three wealthy estates near Oyster Bay and owned by the county (Kershner 2002); **Pelham Bay Park (Bronx)**: 20 acres of old growth with 14 tree species, including Post Oak, within the 2764-acre park at the northern tip of Hunter's Island (Kershner and Leverett 2002); **Eugene and Agnes Meyer Nature Preserve** (Westchester County): 20 acres of Chestnut, White, and Northern Red Oaks, Sweet Birch, and Eastern Hemlock dying because of the adelgid, on a terrace above and below cliffs in a 247-acre preserve (Kershner and Leverett 2002, Levy 2003); **Marshlands Conservancy** (Westchester County): 20 acres of old growth with 9 species of trees including huge Black Oak, White Oak, and Tulip Tree within a 170-acre preserve owned by Westchester County (Kershner and Leverett 2002); **Old Maids' Woods** (Schenectady County): approximately 10 acres of old growth, including Black Oak estimated to be 250 years old, at the upper edge of 21 acres of woods that belong to the City of Schenectady and are managed by The Nature Conservancy (Mawdsley 1998, NYOGFA 2001); **Wertheim National Wildlife Refuge** (Long Island): 10 to 15 acres of old-growth Black Gum swamp, discovered by Daniel Karpen and Bruce Kershner (Kershner 2003); **Wolfe's Pond Park** (Staten Island): 10 acres of old growth within a steep ravine in the 317-acre park (Kershner and Leverett 2002); and **Little Nose and Big Nose** (Montgomery County): ancient Northern White-cedar on limestone cliffs on either side of the New York Throughway, five miles east of Canajoharie (Kershner 2002).

ADIRONDACK PARK, northeastern New York

In 1994 Barbara McMartin wrote that examination of the historical record shows that “unequivocally at least 200,000 acres [in Adirondack Park] have never been logged.” She went on to say, “I feel confident now that the physical record will confirm the existence of at least a half million acres of old-growth forest in the Adirondacks” (1994). In 2000 she told us that her hypothesis of 500,000 acres is being confirmed. Graduate students who were conducting research on several sites had indicated that her estimates in the areas that they were studying were low (2000). Kershner, on the other hand, thinks that the actual acreage will be in the neighborhood of 150,000 acres (2002). The truth of the matter is not known. The lack of comprehensive knowledge of old growth stems in part from the lack of agreement on the meaning of the term “old growth,” part from a general lack of recognition of old-growth characteristics, and part from a lack of priority. The State of New York does not feel compelled to search for and classify its old-growth reserves. Furthermore, the ruggedness and vastness of the region make a complete inventory virtually impossible. Nevertheless, researchers, including McMartin, are making considerable headway in identification.

Adirondack Park encompasses approximately 6 million acres, of which some 2.7 million acres are owned by the state. This acreage belongs to the Forest Preserve and, according to Article VII, section 7 of the New York State Constitution, cannot be logged. The New York Department of Environmental Conservation (DEC) manages the state-owned land. The majority of the old growth in the Adirondacks is on the state land and thus is protected. The stands that readily fit accepted definitions of old growth are located in what DEC categorizes as Wild Forest or Wilderness areas, McMartin points out. The majority of the old growth in the southern Adirondacks is in “Silver Lake Wilderness, parts of the West Canada Lake and Siamese Ponds wilderness areas, Ferris Lake Wild Forest, and Wilcox Lake Wild Forest” (McMartin 1994).

Among Adirondack old growth are tens of thousands of acres of unlogged subalpine forest. E. H. Ketchledge reports that in the 1870s Verplanck Colvin cleared “all but a few” of the summits in the High Peaks region to establish triangulation stations for a survey of the Adirondacks (1979). Nevertheless, according to Peter O’Shea and Paul Jamieson, the mountains were not generally logged above 4000 feet. Subalpine forests burned at times, and the fires might be the result of human activities; but forests at upper elevations experienced considerably less fire than forests lower down (1992, 1993).

Red Spruce and Balsam Fir, accompanied by Mountain Ash and Mountain Paper Birch, dominate the forests between around 2800 feet and 4000 feet. From 4000 feet to treeline at 4900 or 5000 feet, the canopy is almost entirely Balsam Fir, although Black Spruce can also be found. The fir is only 30 or 40 feet tall in most of the subalpine region; and, as the forest approaches treeline, it becomes krummholz, dwarfed and twisted (O’Shea 1993, Ketchledge 1979).

Alpine vegetation lingers on a total of 85 acres of land divided among 11 peaks. Here, in fissures in the rock and in the shelter of ledges and boulders, Balsam Fir, Mountain Paper Birch, Mountain Alder, and Black Spruce are found (DiNunzio 1984).

Five Ponds Wilderness, west-central Adirondacks

--**Southern Five Ponds Wilderness** (Herkimer and Hamilton Counties). The largest known contiguous tract of unlogged forest in the Northeast. Acreage figures differ. George Davis describes as the southern half of the wilderness 47,326 acres in Herkimer County; O’Shea

has used approximately the same figure without specifying the county (1993); J. Roman describes 20,000 hectares (49,421 acres) in Herkimer and Hamilton Counties, and quotes the Commissioners of Fisheries, Game, and Forest writing of a purchase of 50,125 acres (1980); Donald Leopold et al. cite Roman's 20,000 hectares (1998); Jamieson refers to 42,600 acres (1992).

Roman, who studied the area for a 1980 doctoral dissertation, described four forest communities: poor fen, rich fen, upland conifer, and upland mixed. In the poor fens are Black Spruce, Red Spruce, Tamarack, and Balsam Fir. Red Spruce and Balsam Fir are almost the only trees in the rich fens. Upland conifer stands are dominated by White Pine, "some of which are huge and form a super-canopy." (Pine Ridge, south of High Falls, and Five Ponds and Cranberry eskers are outstanding for their pines.) Among the upland mixed communities are beech-maple mesic, hemlock-northern hardwood, and spruce-northern hardwood forests. Fire and storms have disturbed the area, as have outbreaks of spruce budworm and beech scale.

The state bought the tract to settle a claim for damages brought by a land owner who charged that construction of a dam had prevented his shipping and therefore selling the timber on his land. Later the Adirondack Park Agency combined the tract with 12,000 acres in St. Lawrence County to form Five Ponds Wilderness Area (Leopold et al 1988, Roman 1980, Jamieson 1993). Ten thousand acres were severely impacted by a microburst storm in 1995. However, despite descriptions of wholesale destruction, many old-growth trees survived in scattered patches or as scattered individuals (Kershner 2002). Moreover, the Wilderness is large enough that the forest was expected to weather the storm well, not being invaded by exotic species as fragmented forests would likely be.

--**Dead Creek Flow** (St. Lawrence County). Old growth on either side of Dead Creek Flow, which empties into Cranberry Lake. Davis writes of 10 to 15 acres of old-growth hemlock-northern hardwoods, an old-growth northern hardwood forest, an almost pure pine stand that grew up after an 1880 fire, and an example of northern hardwood succession after a 1916 fire, all within a 400-acre tract (2000). On the other hand, Leopold et al. list 150 acres of old-growth hemlock-northern hardwood forest (1988); and Jamieson characterizes as old growth the land described as tax sale 1881, totaling 1572 acres (1992).

--**Otter Pond** south to the St. Lawrence County/Herkimer County border (St. Lawrence County). A 3086-acre old-growth tract, tax sale item 1884 (Jamieson 1992). Northern hardwoods predominate (O'Shea 1993).

--**West of Clear Pond** (St. Lawrence County). Three hundred acres of old-growth on the St. Lawrence County/Herkimer County line. This tract was also part of tax sale item 1884, and is to the east of the larger tax sale area (Jamieson 1992).

Squaw Peak to Blue Ridge, central Adirondacks (Hamilton County)

A strip of intermittent old growth running along the ridge line from Squaw Peak, south across Snowy Mountain, Lewey Mountain, and Cellar Mountain to Blue Ridge. The length of the strip is approximately 15 miles (Kershner and Leverett 2002). In 1993 when Leverett had not yet explored beyond Cellar Mountain, he noted that the width between Squaw Mountain and Cellar Mountain varies from 1.5 miles to perhaps no more than 0.25 miles. An estimate of 0.75 miles in width and 6 miles in length equals 2900 acres--a very conservative figure (Leverett 1993). A fifteen-mile strip at an average width of 0.75 miles would contain almost 7000 acres of old growth.

The forest types represented from Squaw Peak to Cellar Mountain include high altitude

spruce-fir-birch, northern hardwoods-hemlock-spruce, Sugar Maple-American Beech, and Sugar Maple-American Beech-Yellow Birch. Much additional work needs to be done to confirm the boundaries. The high altitude area of old growth extends part way down the west side of the ridge line that connects the peaks. Probably some of the Red Spruce in the lower reaches of the old growth were removed. Determining the exact extent of pre-settlement old growth will be difficult to impossible (Leverett 1993).

Panther Mountain to Fawn Lake, central Adirondacks (Hamilton County)

A swath of forest totaling perhaps 6000 acres stretching northeast from Panther Mountain to Fawn Lake. Panther Mountain overlooks Piseco Lake. A dense tangle of old-growth Balsam Fir covers the top of Panther Mountain itself (Kershner and Leverett 2002).

Lower Jordan River watershed, northwestern Adirondacks (St. Lawrence County)

Eight lots totaling 4880 acres that the state acquired in 1881 and 1882. Researchers assume that little or no logging took place before state acquisition, except for the possible logging of the largest White Pine for use in ship masts during the Civil War. Lumberjacks could have floated the pines down the Jordan River. The land is predominantly low lying sphagnum swamp dominated by Red Spruce and Balsam Fir. Hummocks and ridges support scattered White Pine up to 150 years in age. Northern White-cedar and alder grow along the river banks. Camp Kildare is up river from these sites (Jamieson 1992, 1993).

Camp Kildare, northwestern Adirondacks (St. Lawrence County)

Four thousand six hundred acres of old-growth forest, including poor fen, hemlock-hardwood swamp, and spruce flats. Loggers apparently removed White Pine in the 1800s. The land is privately owned (Davis 1988). The old growth, known as the Hopkinton Tract, surrounds the lakes and the main buildings on the property. Also part of the property is a 5400-acre area, known as the Giddings Tract, which was selectively logged by the US Forest Service after World War II as part of a silviculture study (Adirondack Nature Conservancy nd).

Leopold et al. studied a 593-acre stand of spruce-northern hardwood forest at a site they name Kildare. Most of their stand was on private land; but the state owns small inholdings, and their sample plot was in the Jordan River Wild Forest. Apparently the privately owned portion of their 593 acres is Camp Kildare.

The sampled site contains many Sugar Maple of all sizes, many small Red Spruce, and Yellow Birch. The birch are represented by a few very large, living trees and a few large, standing, dead trees. A diverse shrub layer is characterized by Red Raspberry, Dwarf Blackberry, and Hobble Bush. Sugar Maple and Red Spruce are among the saplings (1988).

Saint Regis Mountain, north-central Adirondacks (Franklin County)

Thousands of acres of old-growth mixed woods in the vicinity of Saint Regis Mountain, Michael Kudish of Paul Smith's College reports. One large area extends southeastward from the eastern end of Fish Pond. Another, which can be seen from Saint Regis Pond, extends up the lower southeastern slope of the mountain. Smaller areas occur to the north: south of Keese Mill and south of Lower Saint Regis Lake. Scattered pockets of old growth can also be found. Settlers did not enter the region until the time of the Civil War, and shortly thereafter the state forest service arrived. As a result, the state acquired much land before settlers had time to log it. Fires have occurred and, after a 1950 blowdown, the state put in roads to salvage cut. The

estimate of "thousands of acres" reflects only unburned areas (Kudish 1993).

East Notch-West Notch Mountain, central Adirondacks (Hamilton County)

Red Spruce-hemlock-northern hardwoods old growth at least 2000 acres in size. In the 1993 edition of *Adirondack Life, Annual Guide to the Adirondacks* and in *The Great Forest of the Adirondacks* (1994), Barbara McMartin characterized the East Notch-West Notch area as "spectacular," without stating acreage. She described a Yellow Birch as 53 inches in diameter, and Red Spruce as over 30 inches in diameter. One Red Spruce stand that she investigated averaged 285 years in age. Bruce Kershner states that the large Yellow Birch are 400 to 480 years in age (2002). Bob Leverett has several times visited the site described by McMartin and corroborates her description. The old growth stretches for several miles on both sides of the Powley road, which passes between East Notch and West Notch Mountains. He estimates that the old growth encompasses at least 2000 acres, and may be substantially more extensive. Some areas exhibit patterns of disturbance that could either be natural or the result of selective logging. After 100 years, the imprint of highly selective logging as practiced around the turn of the century may be indistinguishable from the aftermath of natural disturbances (Leverett 1993). This site is intersected by a 1.2-mile trail to Gold Mine Creek, where some of the most impressive Yellow Birch and Red Spruce can be easily seen (Kershner 2002).

Philosopher's Landing Floodplain, north-central Adirondacks (Franklin County)

Two thousand acres of old-growth floodplain forest along the Raquette River near Tupper Lake. Trees include Silver Maple. David Hunt discovered the old growth, while he was conducting research for The Nature Conservancy. Part of the old growth is on state land; part, on private land (Dunham 1997, Kershner 2002).

Ampersand Mountain, central Adirondacks (Franklin County)

Old-growth hemlock-northern hardwood forest, described by Davis as 1400 acres in extent and by Leopold et. al. as approximately 494 acres. Kershner believes the site to be closer to 2000 acres (2002); and Woods and Cogbill characterize it as "extensive and diverse" (1994). Greenleaf Chase described the old growth as 2 miles deep and 8 miles long (1992). In the hemlock-northern hardwood forest here are many large Eastern Hemlock, a few large Sugar Maple, and many smaller beech. Kershner reports that the site contains the most impressive series of old-growth Yellow Birch in New York State, with ages to nearly 500 years (2002). The dominant subcanopy tree is Striped Maple. In the sparse shrub layer are Sugar Maple, beech, Striped Maple, Eastern Hemlock, and Red Spruce saplings. Hobble Bush is the most common shrub (Leopold et al. 1988). In some areas many beech have died as the result of beech-bark disease (Woods and Cogbill 1994).

Ausable Club/Adirondack Mountain Reserve, east-central Adirondacks (Essex County)

Eleven hundred and fifty acres of old-growth hemlock-northern hardwoods. Hemlock predominates, with numerous trees 3 feet in diameter and 90 to 100 feet tall. The stand also contains large Sugar Maple and Yellow Birch. The Ausable Club, which owns the tract, has given the state a conservation easement that guarantees "public access and restricts timber harvesting and development" (Davis 1988).

Gill Brook area, east-central Adirondacks (Essex County)

Old-growth northern hardwood, spruce-northern hardwood, and mountain spruce-fir forest, continuing from Ausable Club land onto state land higher in the mountains. Leopold et al. did not sample this area, suggested to them by Ketchledge, because it did not meet all the criteria for their study (1988). However, Kershner has no doubt about its old-growth status (2002); and Woods and Cogbill describe the “forests bordering Gill Brook as it ascends from the Ausable River, on Ausable Club land, into state land” as “largely undisturbed” (1994). McMartin, citing James Goodwin, notes that “it is clear that the area around Gill Brook and up toward the valley between Nippletop and Colvin was never logged and is virgin forest” (1994).

Camp Kill-kare, central Adirondacks (Hamilton County)

One thousand acres of old-growth forest on the property of an old great camp (Schaefer 1991).

Huntington Wildlife Research Forest, central Adirondacks (Essex and Hamilton Counties)

Old growth of undetermined extent within a 14,820-acre area owned by Syracuse University, which holds it in trust for the State University of New York College of Environmental Science and Forestry. Leopold, Reschke, and Smith decided not to sample a 1000-acre designated natural area within the Research Forest, because a "small portion" of it through which they walked showed obvious signs of human disturbance. However, in 1941, F. E. Egler had described the natural area as old growth, though not virgin; and Leopold et al. acknowledge that "the majority of [the natural area] may indeed be undisturbed by man" (1988). Woods and Cogbill state that the natural area has not been logged (1994).

Davis describes the natural area as comprised of 418 acres of spruce flats about 125 years in age, 5 acres of spruce-fir swamp forest also 125 years in age, and 537 acres of northern hardwoods forest about 200 years old. He does not give the origin of the communities (2000). In 1985 Canham had sampled northern hardwoods at Arbutus Lake and Wolf Lake, stands which he said "had no record of logging" (Canham 1985). Timber is harvested in the forest outside the natural area, and Davis expresses the need for the state to obtain a conservation easement in order to make sure that harvesting does not occur within the natural area (2000). Beech bark disease has severely impacted the natural area (Woods and Cogbill 1994).

Siamese Ponds Wilderness, central Adirondacks (Hamilton County)

Undetermined acreage of virgin hardwoods, north of Wells and west of Route 8. The late conservation leader Paul Schaefer explored the area from a hunting camp he sets up in the wilderness each year. As of 1991, he had yet to find the boundary of the virgin forest (Schaefer 1991).

Meenahga Mountain Pine, north-central Adirondacks (Franklin County)

Along Meenahga Mountain, a ridge that runs east-west, 730 acres of old-growth White Pine and Red Spruce forest. Many White Pine are 4 feet in diameter and 130 feet tall; many Red Spruce, 2 feet in diameter and 75 feet tall (Davis 1988).

Wilcox Mountain, east-central Adirondacks (Warren County)

At least several hundred acres of old growth dominated by Sugar Maple. Yellow Birch, hemlock, and a few White Ash and White Pine are also present. The old growth appears to extend at least a mile towards the north and towards the south (Kershner and Leverett 2002).

Whiteface Mountain, northeastern Adirondacks (Essex County)

Subalpine forest of undetermined acreage on the west side of the mountain, starting at about 2225 feet. This area was not logged and has not burned. Red Spruce and Balsam Fir compose the forest to around 4000 feet; Balsam Fir, accompanied by American Mountain Ash and Mountain Paper Birch, dominates above that altitude (Fitzgerald and Raynal 1991). As of 1994, few of the large Red Spruce were still living (Woods and Cogbill 1994), the high mortality likely attributable in part to acid deposition.

Mount Tamarac, in the McKenzie Mountain Wilderness, northeastern Adirondacks (Essex County)

A northern hardwoods stand with Sugar Maple, Yellow Birch, and Red Spruce, covering 300 acres on the eastern slope of Mount Tamarac (Davis 1988).

Eighth Lake Old Growth, central Adirondacks (Hamilton County)

Three hundred acres of mixed wood old growth, in which Red Maple, Red Spruce, Yellow Birch, and Eastern Hemlock predominate. Uncommon leafy liverworts and mosses are found in the rich, moist soil. *Neckera pennota*, an epiphyte, grows luxuriantly on tree trunks (Davis 1988).

Ausable Delta, northeastern Adirondacks (Clinton County)

Two hundred and seventy acres of old-growth floodplain forest in the delta of the Ausable River, which flows into Lake Champlain. Silver Maple and Eastern Cottonwood dominate. This undeveloped land is privately owned. The state of New York owns the balance of the delta, the Ausable Wildlife Management Area (Davis 1988).

Marcy Swamp, east-central Adirondacks (Essex County)

A 220-acre swamp of Northern White-cedar, associated with Red Spruce and Balsam Fir. The white-cedar are up to two feet in diameter and forty feet tall (Davis 1988).

Phelps Brook, in the High Peaks Wilderness Area, east-central Adirondacks (Essex County).

Spruce-fir forest of 180 (Davis 1988) or 198 acres (Leopold et al. 1988) at an elevation of approximately 3700 feet. Balsam Fir dominates; Mountain Paper Birch and Red Spruce are also present in the canopy. The shrub layer consists mainly of Balsam Fir and Red Spruce saplings (Leopold et al. 1988). Davis notes that this stand is one of the few in the High Peaks that escaped fires in 1903 and 1908; but that it is now in decline, probably because of acid precipitation (2000). The stand shows no evidence of commercial logging (Woods and Cogbill 1994).

Roaring Brook Falls, in the Giant Mountain Wilderness, east-central Adirondacks (Essex County)

One or two old-growth stands. Davis speaks of a 170-acre stand of pure Eastern Hemlock, with trees almost 400 years old (2000). Leopold et al. describe a 148-acre stand of large Eastern Hemlock, some Sugar Maple, and many smaller American Beech (1988). Kershner measured hemlocks up to 430 years in age (2002).

McKenzie Mountain, in McKenzie Mountain Wilderness Area, northeastern Adirondacks (Essex County)

One hundred fifty acres of old-growth spruce-northern hardwood forest at an elevation of approximately 2600 feet (Leopold et al. 1988). It is located along the Two Creeks Trail west of Lake Placid, near the transition from conifer forests to hardwoods (Woods and Cogbill 1994).

Round Mountain, east-central Adirondacks (Essex County)

An extensive old-growth stand on a steep, north-facing slope above the route to Keene Valley. The stand is dominated by Eastern Hemlock “with a healthy Sugar Maple component.” A trail that loops over Noonmark Mountain and then Round Mountain traverses the old growth (Wessels 2001).

Arnold Pond, High Peaks Wilderness (Essex County)

“Old-growth montane spruce-fir forests with no evidence of logging” surrounding Arnold Pond. A large portion of the stand is on rocky, steep slopes. Numerous large spruce had died shortly before 1994 (Woods and Cogbill 1994).

Whaletail Mountain, High Peaks Wilderness (Essex County)

“A mid-elevation stand of hardwood-dominated forest” next to the main trail between Adirondack Loj and Marcy Dam. The stand shows no signs of logging. Furthermore, the presence of scattered Red Spruce suggest that it was not commercially logged (Woods and Cogbill 1994).

Mays Pond and Queer Lake, central Adirondacks (Hamilton County)

Old growth of undetermined extent with Eastern Hemlock, White Pine, Sugar Maple, Yellow Birch, and Red Spruce (Kershner and Leverett 2002).

Panther Gorge, in High Peaks Wilderness Area, east-central Adirondacks (Essex County)

Unlogged rainforest in a gorge descending 2000 feet from the shoulder of Mount Marcy. Portions of the gorge, which is on the southeast side of the mountain, have been logged (Schaefer 1991, Papero 1993).

Cold Brook Floodplain, Harrietstown, north-central Adirondacks (Franklin County)

Eighty acres of mixed woods, in which Red Spruce are conspicuous because of their size (Davis 1988).

Camp Massawepie, northwest Adirondacks (St. Lawrence County).

Old growth within the 3600-acre Massawepie Scout Reservation. Paul Jamieson told us in 1993 that there was possible old-growth forest along the edges of the lakes of the wetland complex owned by the Boy Scouts. In 1997 the State of New York agreed to buy a conservation easement to protect the Reservation, including “a 2.5-mile esker with a stand of old-growth timber” (TNC 1997).

Pine Orchard, in Wilcox Lake Wild Forest, central Adirondacks (Hamilton County)

Fifty acres of White Pine, dated back, by core samples, to the hurricane of 1815.

However, Kershner has aged the hemlock and Yellow Birch at the site to at least 300 years old, which, he says, means this grove is original old growth, partly opened by the 1815 hurricane to allow the pines to fill in the gaps between the hemlocks (2002). The pine average 35 inches in diameter; the largest pine is 54 inches (Davis 1988). A few stumps are scattered through the forest. According to Kershner, they were left after salvage logging following a blowdown in 1950 (2002).

Between Pine Orchard and Route 8 is a Sugar Maple old-growth forest. Sugar Maple is regenerating in the understory (Champagne 2002).

Pack Forest Natural Area, east-central Adirondacks (Warren County)

A 48-acre area with 12 to 14 acres of unlogged White Pine-hemlock forest and additional old growth. The White Pine are up to 45-58 inches dbh. The balance of the 48 acres is diverse and includes a northern hardwood forest against drumlins, a wooded pond, and an open fen. The northern hardwood forest burned about a hundred years ago, and whether or not the fire was of human origin is not known. However, a botanical survey of the forest conducted in 1991 by scientists from the New York State Museum suggests that the entire area is of natural origin. It has 433 vascular plant species and three hybrid species of which 355 species are native, an unusually varied native flora for a small area in a severe climate. "Non-native species are almost totally restricted to the periphery along roadways and power lines outside the old-growth forest." Pack Forest is owned by the State University of New York College of Environmental Science and Forestry and encompasses six square miles. The University uses the forest for educational purposes. A nature trail was recently renovated to accommodate the handicapped. Biologist Richard Mitchell reports that the ramps were installed on previously cut paths without disrupting the area (Mitchell and Tucker 1994, Mitchell 1998).

Sacandaga River, in Silver Lakes Wilderness, central Adirondacks (Hamilton County).

A stand of hemlock-dominated old growth on the north-facing ridge along the west branch of the Sacandaga River. The readily accessible area is at least 100 acres in size, but the old growth is likely to be much more extensive. "Old-growth characteristics are excellent throughout the stand" (Leverett 1993).

Moss Lake, central Adirondacks (Herkimer County)

A strip of mixed northern hardwoods-hemlock-Red Spruce on a ridge above Moss Lake. The area is 3/4 to 1 mile long and perhaps 1/8 of a mile wide, making a total of 60 to 64 acres. Around the old growth are large areas that were partially or completely logged for the camps constructed around the lake. The clearings have produced an edge effect, which allows some light-loving species like White Ash to penetrate the old growth (Leverett 1993).

CATSKILL STATE PARK, southeastern New York (Ulster and Greene Counties)

The Catskill region extends beyond the boundaries of the Catskill State Park; and, like Adirondack Park, Catskill Park encompasses both private and public land. However, "pretty much all" the known old growth in the Catskills is on the Park's public land (Rudge 1993). Except for occasional low elevation stands saved by their inaccessibility, the known old growth occurs on the summits and upper slopes of mountains, largely in what Michael Kudish

characterizes as ridge forest (1971).

Ridge forests usually begin at around 3000 feet in elevation and account for perhaps 1/8 or 1/10 of the total forest. Below them are slope forests dominated by Sugar Maple and American Beech. In the ridge forest of the eastern Catskills, Red Spruce, Balsam Fir, and Mountain Paper Birch are the most common species. Among them may grow Yellow Birch, Red Maple, Black Cherry, and American Beech. Wherever Red Spruce is present Balsam Fir is often found, but Balsam Fir appears on some sites without spruce. In the central and western Catskills, Yellow Birch, Red Maple, Black Cherry, and American Beech dominate the ridge forests; and spruce, fir, and Paper Birch "are rare or absent." Balsam Fir is common in the central Catskills, but absent in the western. In disturbed areas and on steep ledges, Mountain Ash, Pin Cherry, and Mountain Maple accompany "scrubby" hardwoods and/or softwoods.

The hardwood ridge forests are interspersed with fern glades or openings that are permanent rather than a result of disturbance. The Mountain Wood Fern and, in smaller numbers, the Hay-scented Fern dominate the glades. Throughout the ridge forest of the Catskills, Mountain Wood Fern dominates the herb layer. The Hay-scented Fern is also very common in both the spruce fir and hardwood ridge forests (Kudish 1971).

As of June, 2002, Kudish had identified 42 distinct areas of old growth (which he calls "first growth" to distinguish it from second growth) in the Catskills. The acreage totaled 97.1 square miles (>60,000 acres) (Kudish 2002). He continues to conduct research in the Catskills, and anticipates that the total acreage will increase. The largest areas are listed below.

The old-growth areas do not correlate with the four state-established Wilderness areas: Slide Mountain-Panther, Big Indian-Beaver Kill, West Kill-North Dome, and Plateau-Indian Head. Each of the Wilderness Areas contains second- and third-growth forest around a core of old growth. In addition, some of the smaller old-growth tracts are outside the Wilderness Areas. At the time that the Wilderness Areas were established, the old growth had not been mapped (Kudish 2000).

--**Mill Brook Ridge-Big Indian Range**, combined with Cradle Rock Ridge. 26.8 square miles; average elevation of entry points, 2779 feet.

--**Slide-Panther-Peekamoose Range**. 24.8 square miles; average elevation of entry points, 2649 feet.

--**Beaver Kill Range**. 7.8 square miles; average elevation of entry points, 2520 feet. Kershner recently discovered that Beaverkill Range is continuous with Mill Brook Ridge.

--**West Kill Mountain**. 6.0 square miles; average elevation of entry points, 2672 feet.

--**Plateau Mountain**. 4.4 square miles; average elevation of entry points, 2856 feet.

--**Sugarloaf-Twin-Indian Head Mountain Range**. 3.7 square miles; average elevation of entry points, 2660 feet.

--**Blackhead Range**. 3.3 square miles; average elevation of entry points, 3105 feet.

--**Wildcat Mountain**. 3.7 square miles; average elevation of entry points, 2725 feet.

--**North Dome-Sherrill Mountain Range**. 2.6 sq miles; average elevation of entry points, 2944 feet.

--**Dry Brook Ridge, main**. 2.7 square miles; average elevation of entry points 2947 feet.

--**Evergreen-Rusk Mountains**. 1.8 square miles; average elevation of entry points, 3025 feet

--**Kaaterskill High Peak**. 1.6 square miles; average elevation of entry points, 2758 feet.

--**Belleayre Mountain**. 1.5 square miles; average elevation of entry points, 2945 feet.

--**Halcott Mountain, main**. 1.2 square miles; average elevation of entry points, 3120

feet.

--**Windham High Peak.** 0.9 square miles; average elevation of entry points, 3013 feet

--**Cradle Rock Ridge.** 0.8 square miles; average elevation of entry points 2881 feet.

--**Halcott Mountain, northeast.** 0.6 square miles; average elevation of entry points 3043 feet.

--**Hunter Mountain.** 0.6 square miles; average elevation of entry points 3533 feet.

--**Red Kill Ridge.** 0.4 square miles; average elevation of entry points 2982 feet.

--**Platte Cove.** 0.4 square miles; average elevation of entry points 1510 feet.

Green Lakes State Park (Onondaga County)

Old growth of undetermined extent, but possibly in excess of 800 acres, within the 1875-acre park. Approximately 200 of the old-growth acres are found in slopes and hollows west of Round Lake. The majority of the old growth in the park is dominated by Sugar Maple, American Beech, Eastern Hemlock, and basswood. However, a sheltered cove southwest of Round Lake supports five to six acres dominated by Eastern Hemlock and towering Tulip Trees. Growing with them are Sugar Maple, American Beech, Northern Red Oak, Yellow Birch, basswood, Bitternut Hickory, and Eastern Hophornbeam (NYOGFA 2002).

Allegany State Park, southwestern New York (Cattaraugus County)

Thirteen stands of old growth totaling at least 705 acres within a 65,000-acre park. Researchers expect to identify additional old growth. The 13 stands include:

--**Big Basin.** At least 400 acres of never-logged old growth, possibly a total of 500 to 600 acres, within an 1800-acre area. Trees are 3 to 5 feet in diameter, and most are 200 to 350 years old. Dominant tree species are hemlock, Black Cherry, Sugar Maple, and Yellow Birch. Basswood, White Ash, American Beech, White Pine, and Red Maple are present in lesser numbers. A stand of Black Cherry is particularly impressive (Kershner, 2002), as it includes numerous trees with trunks 32 to 48 inches in diameter (Kershner and Leverett 2002).

The only direct human disruption has been logging along the northern fringe where 5-foot diameter White Pine were cut just before the park was created, and development in the 1950s of a now-abandoned ski run on 5 acres along the southern border. However, beech blight (necrosis) is killing most of the old beech. Thus part of the area is open canopy, with thickets of beech root sprouts. Also, overabundant deer (50 per square mile) are eating tree seedlings and allowing thick fern colonies, which further prevent growth of seedlings, to develop.

--**Cricks Run.** 50 acres of hemlock and northern hardwoods around and along a large brook.

--**Red House Creek Headwaters.** 40 acres of beech, Sugar Maple, hemlock, Black Cherry, surrounding a beaver flow and meadow.

--**Camp Ten Site.** 40 acres of old-growth hemlock, Sugar Maple, Black Cherry, beech, Northern Red Oak, on upper slopes above a campground.

--**Halle Ravines.** 40 acres of hemlock and northern hardwoods around and along three small brook ravines.

In 1982 the state's Office of Parks, Recreation and Historic Preservation, which manages the state-owned park, proposed logging Big Basin and additional areas within the park. A 14-year citizens' campaign convinced Governor Pataki to protect the park's old growth in 1995, but a change of governor could end that protection (Kershner 2002).

Zoar Valley, western New York (Erie and Cattaraugus Counties)

A complex of 630 acres of old growth in four canyons of Cattaraugus Creek (Main and South Branches). Four hundred of the 630 acres are within the 3000-acre Zoar Valley State Multiple Use Area. The remaining 230 acres belong to a variety of owners. Of the 400 state-owned acres, 215 have experienced no logging or fire.

For 9 miles along the Cattaraugus, all of the forested slopes, including those of numerous side ravines, are old growth. Much of the top rim of the gorge is edged by a 10-foot to 500-foot wide swath of selectively logged old growth. Valentine Point, a 750-foot-long knife-edge ridge supports craggy “ancient” Chestnut Oak, Red Oak, and Eastern Hemlock. Chestnut Oak grows in a dwarfed form on barren knife-edge ridges.

The Gallery of Giants, a six-mile-long mostly continuous belt of towering trees, covers the river terraces along the bottom of a 415-foot-high canyon and extends up the canyon’s steep slopes to its top rims. Nineteen tree species grow in the Gallery, including Tulip Tree, American Sycamore, Northern Red Oak, Bitternut Hickory, Black Walnut, Sugar Maple, White Ash, Cucumber Magnolia, and Green Ash. On one of the terraces flourish two American Elms, apparently untouched by blight because of their isolation in the canyon. The Gallery is on state-owned land.

Five to ten acres of old growth are protected in the new Scobey Dam town park; 80 acres in the 450-acre Deer Lick Nature Conservancy Preserve, abutting the State Multiple Use Area; and 35 acres in the Alexander Preserve, owned by the Nature Sanctuary Society of Western New York. Private owners hold a total of 105 acres of old growth (and about 40% of the canyon as a whole, or 2700 acres). These acres are not protected. In the last five years, 120 acres of old growth on private land were clearcut. Unfortunately, the 400 acres of public land enjoy no permanent protection either. In 1996 the New York Department of Environmental Conservation (DEC) unveiled plans to log the Multiple Use Area, including a part of the old growth. Citizens waged a campaign to protect the old growth and succeeded in halting the logging for the indefinite future. The Citizens Campaign for the Environment (716-831-3206) and Niagara Frontier Botanical Society have published a Guide to the Ancient Forests of Zoar Valley by Bruce Kershner (2000) (Kershner 2002).

Palmaghatt Kill Ravine, Minnewaska State Park Preserve (Ulster County)

Old growth of undetermined extent, but apparently at least 500 acres, in a ravine. Hemlock and Yellow Birch dominate. Red Maple, Black Cherry, and Sweet Birch are also present. The woolly adelgid has attacked the hemlock and as of mid-2002 the damage was “moderate to severe” (NYOGFA 2002, Yarrow 2002).

Hemlock Lake, west-central New York (Livingston County)

According to a preliminary estimate, 415 acres of old growth along the southwest shore of Hemlock Lake, one of the two westernmost Finger Lakes. The old growth is part of 7000 acres of land owned by the City of Rochester to protect water quality in Canadice and Hemlock Lakes, on which the city draws for drinking water. Most of the identified old growth is in a 2.5-mile swath on mild to very steep slopes. The vertical elevation change is 1000 feet. Twenty deep ravines and forested gullies punctuate the swath. The less steep slopes were selectively logged in the early 1900s; the steeper slopes show no signs of logging and are largely untouched. Red Oak, White Oak, and Sugar Maple are up to 250 years old. Hemlock is up to 400 years in age. A Bald

Eagle nest is located just outside the old growth.

Other parts of the 7000 acres have potential for old growth and should be surveyed.

In 2001, the city secretly built a logging road to the edge of the forest. The logging would have included the old growth and steep ravines and would have caused erosion and siltation of the lake. A local resident discovered the road and informed the Sierra Club, which asked Bruce Kershner to show the extent and significance of the old growth. A major citizens' campaign then resulted in the city's agreeing to a two-year moratorium on logging (Kershner 2002).

Gardiners Island, between the two prongs of Long Island

Old-growth White Oak on a 3300-acre island owned by the Gardiner family since 1639. The island has trees 300 or 400 years old (Karpen 1993, Schmitt 1989). Old-growth acreage is reported to be 400 to 700 acres, but no team of old-growth experts has visited the site. Reportedly dense thickets of catbrier make exploration difficult. Different views of family members about the future of the site make the long-term survival of the old growth problematic (Kershner 2002).

Swamp Woods Natural Area, Montezuma National Wildlife Refuge, western New York (Seneca County)

One hundred acres of swamp woods believed to be uncut, within Montezuma Marshes, a 2100-acre section of the Wildlife Refuge. Red Maple and Swamp White Oak are the dominant trees (Vogelmann 1972).

Hale "Big Woods" Tract, western New York (Monroe County)

One hundred acres of privately-owned old growth along the shore of Lake Ontario. The site supports Eastern Hemlock, Sugar Maple, Northern Red Oak, Yellow Birch, Tulip Tree, American Beech, and White Ash. Trees average 200 to 300 years in age; one 17-inch fallen hemlock was found to be 515 years old. The site was part of the property of the town's first European settler, Mr. Hale. His descendants still own it, and live in homes along the shore. Except for the removal of dead and hazardous trees they think that the site has not been logged since the mid-1800s. A road parallel to the lake, passes through the property (Kershner 2002).

Montauk Point Black Gum Forest (Long Island)

Up to 100 acres of old growth dominated by towering Black Gum up to 420 years in age. Amid the Black Gum are White Oak 3 feet in diameter and up to 250 years in age, Black Oak, Scarlet Oak, American Holly up to 200 years in age, and American Beech also up to 200 years old. Mosses are lush. The old growth is on a bluff above the Atlantic Ocean and only about a mile from the eastern tip of Long Island. The area is the former Camp Hero Military Installation, now a state park adjoining Montauk State Park. The old growth was discovered and confirmed by David Hunt, Bruce Kershner, and Daniel Karpen (Kershner 2003).

Neversink River Preserve, southeastern New York (Orange County)

A 520-acre preserve containing 50 or 60 acres of old growth. The preserve is on the lower Neversink River. The old growth extends from the floodplain, where sycamore and Red Maple dominate, to slightly higher ground where Sugar Maple and then, on more acidic soil, huge White Pine grow (Curatola 1993, Schuler 2003).

Reinstein Woods State Preserve/Stiglmeier Town Park (Erie County)

Eighty acres of old growth within a 600-acre natural area: 65 acres of old growth in the 290-acre Reinstein Woods State Preserve and 15 acres of old growth in an adjacent 310-acre park owned by the town of Cheektowaga. The old growth is dominated by Sugar Maple, American Beech, and Black Cherry. Beech and Black Cherry are up to 4 feet in diameter. Dr. Victor Reinstein, who willed the land for the preserve and donated much of the land for the town park, purchased the land from the descendants of the Native Americans who once owned it. The 1798 Holland Land Survey contains an account of the tract; and two stone pillars from the survey remain on the site (Kershner 2002).

The abundant Black Cherry and open-grown tree forms indicate that past disturbances opened up parts of the woodland; but, according to Mrs. Reinstein, who researched the site's history, it was not logged (Leverett 2001).

The state preserve is protected by a "forever wild" state law passed specifically to protect it. However, the natural area is surrounded by residential and industrial development. Beech blight is gradually killing the beech. Furthermore, a dense deer population (100 deer per square mile) has killed the woods's wildflower colonies and 90% of the tree seedlings (Kershner 2002). A detailed account of the woods can be found in Bruce Kershner's book *Buffalo's Backyard Wilderness* (Western New York Heritage Institute, Canisius, NY, 1993).

Mianus Gorge Preserve, southeastern New York (Westchester County)

Fifty-three acres of never-logged forest with trees 350 or more years old. The forest includes Eastern Hemlock, White Oak, Chestnut Oak, American Beech, Tulip Tree, Sweet Birch, Yellow Birch, Flowering Dogwood, and Highbush Blueberry. Deer are destroying the understory. The preserve is managed by Mianus Gorge Preserve Inc. Mianus Gorge Preserve Inc. and The Nature Conservancy each own part of 730 acres, which includes the old growth. Additional acreage is protected by conservation easements (Kershner and Leverett 2002, Christie 2003).

Sunken Forest, in Fire Island National Seashore, on a barrier island between Great South Bay and the Atlantic Ocean

A 70-acre site with 20 to 30 acres of maritime holly forest that has never been logged, according to Park Superintendent Jack Hauptman. American Holly, Sassafras, and Shadbush dominate the forest. Black Gum is found in damp depressions. Also within the site is a pristine dune and swale community and a salt marsh community. Growing on the portion of the dunes and swales nearest the maritime forest are Eastern Red-cedar, Pitch Pine, Black Cherry, Dwarf Sumac, Highbush Blueberry, and American Holly. The forest developed over a period of 200 to 300 years on what was originally bare sand. Currently a sand road and trails through the site are sources of erosion. Deer browsing also presents a problem. The ground in the forest today is almost bare, whereas 20 years ago it bore herbaceous plants (Ebert 1993, Art 1976, Hauptman 1992, Lawrence 2003).

The New York Botanical Garden, The Bronx

A 40-acre old-growth forest, dominated today by oaks, hickories, and Tulip Tree. The woolly adelgid has killed the hemlock (Kershner and Leverett 2002). The dogwood are in decline due to dogwood anthracnose (another exotic pathogen), particularly in the interior of the forest (Morrison 2000). The city purchased the land occupied by the Botanical Gardens from the

Lorillard estate in 1884 and created the Gardens in 1895 (Kershner and Leverett 2002).

Letchworth State Park, western New York (Livingston and Wyoming Counties)

Within a 14,000-acre park, some 12 stands of old growth. The Western New York Old Growth Forest Survey team has visited and confirmed five sites totaling approximately 75 acres. Park naturalist Doug Bassett has told them that the park has an additional seven stands totaling 100 to 150 acres. Sites confirmed by the Survey are:

--**Eastern Red-cedar** growing in clusters on the canyon face and rim over a distance of seven miles. The red-cedar are 200 to 500 years in age. The cliff face totals approximately 30 acres.

--**Lower Falls Terrace Woods.** Seven acres of old-growth hemlock and Sugar Maple on a terrace between the canyon top and the Genesee River. Trees are very tall and include a 140-foot White Ash.

--**Dehgasoh Woods.** Twelves acres of hemlock, beech, Sugar Maple, and White Pine, over 200 years in age, in a deep side ravine.

--**Great Bend Gorge Bottom.** Twenty-five acres of old growth on an upland terrace at the bottom of the Great Bend portion of Letchworth Gorge (Kershner 2002; Bassett 1993).

**The park, which runs 17 miles along a gorge cut by the Genesee River, was created by William Pryor Letchworth, a Quaker who made a fortune in manufacturing. He glimpsed one of the park's waterfalls from a train in 1858, and in 1859 beyond purchasing land on both sides of the river. By his death in 1910, he had pieced together 1000 acres, which he bequeathed to the State of New York. The state subsequently acquired additional acreage (Dobbin 2006). (*Updated August 6, 2006*)

Six Mile Creek Old Growth, central New York (Tompkins County)

Fifty acres of old-growth ravine forest with large, tall trees—Eastern Hemlock, beech, Tulip Tree, Sugar Maple, basswood in the eastern end of Mulholland Wildflower Preserve and adjacent woodlands along the south bank of Six Mile Creek. Old water pipelines go through part of the site, which probably had salvage logging in the past. The site was featured on an 1886 botanical map of Tompkins County. The site, which is owned by the City of Ithaca, is also known as Beechwoods or Van Natta's Dam Area (Mawdsley 1988). Kershner and Leverett write that Mulholland Wildflower Preserve contains 15 to 20 or more acres of old growth. The old trees are widely and patchily distributed, which indicates past selective logging (2002).

Niagara Gorge, western New York (Niagara County) and Ontario, Canada

About 40 acres of ancient Northern White-cedar along the seven-mile long Niagara Gorge. The white-cedar start within 75 feet of the American Falls and continue in irregular but lengthy patches on both sides of the 325-foot, limestone (dolostone) gorge. Sampling has confirmed that white-cedars on the talus slopes are more than 400 years old. The White-cedars on the cliff face have not been sampled, but research by Doug Larson of the University of Guelph, Ontario, has found trees up to 1700 years old on habitat in Canada that is identical to that of the Niagara Gorge.

The white-cedars on the cliffs include upside-down trees and "daredevils," trees that project straight out over the canyon. In the dense groves on the 45-degree boulder slopes are giant clones. Branches and trunks are physically connected to other branches, trunks, and roots

as far away as thirty feet. The trunks, Bruce Kershner writes, are at least 150 to 500 years old, and the root bases may be thousands of years old. Kershner was the first to recognize the age of the gorge's White-cedar and began conducting research on them in 1999.

Massive Northern Red Oaks and White Oaks 180 to 260 years in age line the rim of the red shale banks over the lower Niagara River, downstream from the actual gorge (Kershner 2002).

Bergen Swamp Preserve, western New York (Genesee County)

Five acres of old-growth eastern Eastern Hemlock and White Pine and possible lowland old-growth within a 3000-acre preserve. The hemlock and pine, 200 to 260 years old, grow on an island mound surrounded by swamp. Probably this island is the only upland old-growth site. The balance of the preserve consists of open-canopy swamp with hemlock, Northern White-cedar, and White Pine growing on hummocks that project above the water line. Coring two fallen 17-inch cedars showed that their ages exceeded 250 years. The swamp has much larger cedars. "If the site is ever searched for old growth, a large acreage could be discovered," Kershner writes. The preserve is owned by the Bergen Swamp Preservation Society. Visits are permission only. See <<http://www.bergenswamp.org>> (Kershner 2002).

Fredonia State College Lodge, southwestern New York (Chautauqua County)

Approximately 40 acres of old-growth on the crest of the Allegheny Escarpment. Trees include American Beech, Black Cherry, and Sugar Maple. Individual fallen trees may have been cut up for firewood, but the 40 acres have apparently not been logged. The property totals 193 acres, the northern part of which has recently been selectively logged (Kershner and Leverett 2002, Western 1995).

Goose Egg Ridge, east-central New York (Washington County)

Old growth of uncertain extent but more than 40 acres. Many portions of the upper slopes at the southern end of the ridge look undisturbed. The area is owned by the state (Pederson 2002).

Lincoln Mountain State Forest/Saratoga Restoration Area, east-central New York (Saratoga County)

An old-growth swamp forest of uncertain extent but greater than 40 acres. The oldest trees are Black Gum. Neil Pederson, who discovered the site, was able to process cores from 28 Black Gum. Eight of the trees are more than 500 years old. Red Spruce are also present, with the oldest having an inner ring date of 1857. The only evidence of logging that Pederson found was a single hemlock stump (Pederson 2002).

Tonawanda Indian Reservation (Erie, Niagara, and Genesee Counties)

Three old-growth groves totaling 40 acres within a 7000-acre Indian Reservation: 20 acres with Tulip Trees, Sugar Maple, and Red Oak (Genesee County); a 15-acre stand of very old Sugar Maple, Red Oak, and other species in a lowland (Erie County); 5 acres on an upland knoll in the floodplain of Tonawanda Creek (Niagara County). The reservation belongs to the Tonawanda Band of the Seneca Tribe. Tribal members are free to log in the reservation without obtaining any permission unless they intend to cut trees near someone else's buildings. The old growth is not protected and has "survived only by luck" (Kershner 2002).

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