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STATE-OWNED LANDS IN THE EASTERN UNITED STATES:

LESSONS FROM STATE LAND MANAGEMENT IN PRACTICE

BY ROBERT H. NELSON



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Cover Photo: St. Regis Mountain in the Adirondack Mountains, New York © John Marino / flickr.com

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Loon Lake, Adirondack Mountains, New York

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SUMMARY

Most policy discussions about public lands focus on the federal lands that comprise nearly 30 percent of the United States, most of which is found in the West. Yet there is another important class of publicly owned lands that are often overlooked: state-owned lands. State governments own and manage about 9 percent of the U.S. land area, about one-third as much land as the federal government manages. Outside of Alaska, which contains large swaths of state-owned land, almost 40 percent of state land in the United States is found in the East. Indeed, some eastern states own vast amounts of land, such as New Jersey (21 percent of the state); Florida (16 percent); New York (14 percent), Pennsylvania (14 percent), Michigan (13 percent), and Minnesota (11 percent).

Relatively little has been written about eastern state lands, in part due to the diversity of these states' policies and management practices. No single book or comprehensive study examines state-owned lands in the East. Yet in several eastern states with large portions of state-owned lands, the management of those lands presents economic and environmental policy issues comparable to federal lands in the West. Because of their diverse management practices, state-owned lands offer many practical tools and lessons that might be usefully applied to federal land management.

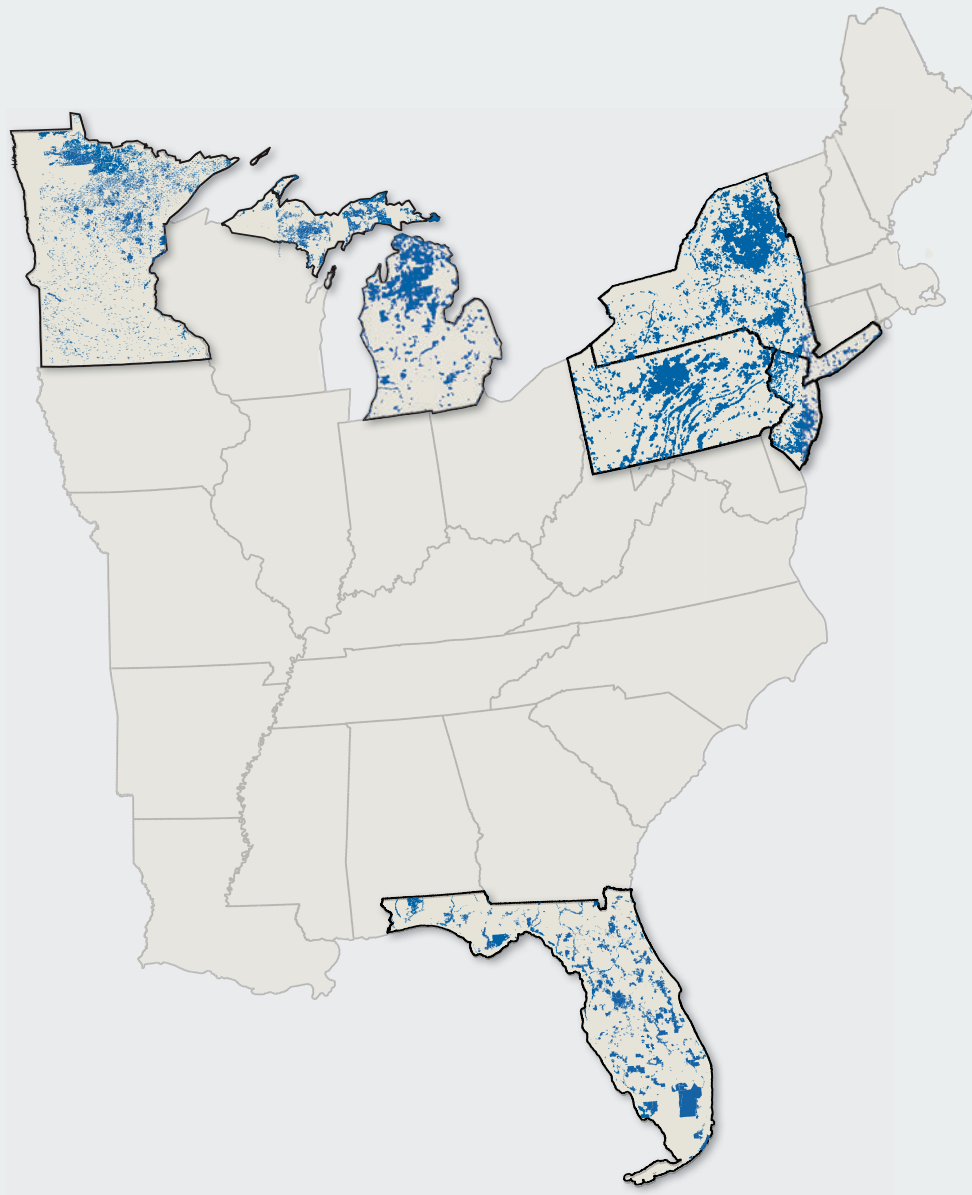
This report seeks to fill that gap by examining the state land management practices of six eastern states. The author, Robert H. Nelson, has spent much of his professional career studying public land management, including 18 years as an economist in the Office of Policy Analysis in the Office of the Secretary of the Interior. As a professor at the School of Public Policy at the University of Maryland, he has written extensively on public lands, including *The Making of Federal Coal Policy* (Duke University Press, 1983), *Public Lands and Private Rights: The Failure of Scientific Management* (Rowman & Littlefield, 1995), and, most recently, *The Use and Management of Federal Coal* (PERC, 2017).

As readers of this report will discover, much can be learned from the diverse management practices of eastern state-owned lands. The eastern states examined in this report provide several practical management lessons in their roles as “laboratories of democracy,” including demonstrating how to:

- actively manage lands for multiple uses to generate revenue while also preserving important environmental and ecological values;
- raise revenue from timber harvests, hunting licenses, mineral leasing, recreation use fees, federal grant programs, and other sources to cover most or all land management costs;
- create innovative land management methods and administrative systems in response to local needs or conditions, such as the rapid growth of state wildlife management areas and other forms of “dominant-use,” the creation of new kinds of state land systems such as Adirondack Park in New York and the Pine Barrens in New Jersey that bring together large areas of both public and private land, and the use of transferrable development rights to resolve land-use conflicts;
- reduce litigation, political conflict, burdensome rules and regulations, excessive procedural requirements, bureaucratic formalities, and other barriers to flexible decision-making that are common in federal land management.

In short, eastern states have been a source of experimentation and innovation in land policies, administrative arrangements, and management approaches—often with considerable economic and environmental success. This

STATE LANDS IN MINNESOTA, MICHIGAN, NEW YORK, NEW JERSEY, PENNSYLVANIA, AND FLORIDA



success is demonstrated, for example, by the fact that most state forests have been certified by national accreditation organizations as meeting high professional standards of forest management.

The need to find common values on a national basis in an increasingly pluralist nation has contributed to the bitter divisions with respect to the purposes of federal lands. As instruments of state governments, state-owned lands have better-defined constituencies and clearer purposes that promote a stronger sense of land management accountability in response to citizens' needs and preferences at the state and local level.

STATE-OWNED LANDS IN THE EASTERN UNITED STATES:

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INTRODUCTION

Current policy discussions about public land management typically focus on western states. This western focus reflects the fact that most federal lands are located in the West. This westward emphasis, however, obscures other important and overlooked facts: Many eastern states also own millions of acres of public land, and in some cases they have managed these lands since before some western territories gained statehood.

In recent years, public land management in the West has led to heated political debates over issues such as the transfer of federal lands to state control, national monument designations, and even armed conflicts over grazing rights.² Regardless of one's view on these controversial topics, nearly all observers recognize the need for innovative ideas to improve federal land management. This broad consensus can be seen as a recognition of the failures of the federal land system, which was designed in large part on the basis of ideas that emerged in the Progressive Era from 1890 to 1920.³ During this period, the longstanding 19th-century policy of disposal of public lands to state and private owners was abandoned, and a new 20th-century policy of retaining these lands in permanent federal ownership came to prevail.

The Progressive-Era assumption that federal control is superior to decentralized state or local management is being increasingly challenged in favor of more locally responsive management solutions. Over recent years, maintenance backlogs on federal lands have grown significantly, national forests have become overgrown tinderboxes prone to large and catastrophic wildfires, and competing demands over environmental protection and natural resource development have created acrimony and endless litigation over public land use. Today, there is renewed interest in ideas and concepts that could improve federal land management as well as land agencies' relations with the states and local communities most impacted by their decisions.

States act as useful “laboratories of democracy” that can enhance our understanding of public land management and provide practical lessons to improve federal land management. Eastern states, in particular, have a long and often-overlooked history of land management and can offer important insights for public land policy elsewhere. The purpose of this report is to provide an assessment of the land management practices of eastern states and draw lessons for federal land management today.

STATE-OWNED LAND

Total state land in the United States equals 201 million acres, 9 percent of the nation’s land area. More than half of this land is located in Alaska. Excluding Alaska, there are 96 million acres of state land, which comprise 5 percent of the country’s land outside Alaska. About half of this state land is located in the West.

Fully 83 percent of western state-owned land consists of state trust land that dates to the historic transfers of portions of federal lands to states when they were admitted to the Union. Some western states such as Nevada largely disposed of those lands, but others have held significant areas as state trust land to this day. Arizona, which retained 96 percent of its original trust lands, is one example. In total, there are about 45 million acres of state trust lands in the United States today, 87 percent of which are found in the West.

In 1996, professors Jon Souder and Sally Fairfax published *State Trust Lands: History, Management and Sustainable Use*, the most comprehensive examination of the quality of management of state trust lands in the West. They reported that “as the Forest Service model [of land management] becomes more and more widely recognized as a failure, or as falling apart, or both, the quest for new visions of public resource management grows increasingly urgent.” They were impressed “by the opportunity that trust lands provide to analyze and experiment with cost-effective, efficient management of public resources.” Indeed, “as we begin to recognize that sustainable use ... is the most pressing challenge,” they wrote, “the utility of the trust lands model becomes increasingly apparent.”⁴ The advantages of state trust land management were due in large part to the very existence of the trust status that promoted economic and environmental accountability. Net revenues from trust lands are transferred to schools and other public institutions in the state, giving these institutions a strong incentive to press for land policies that generate high levels of revenue that are sustainable over the long run. Since Souder and Fairfax’s research, other studies of state trust land management in the West have also reached favorable conclusions.⁵

Though not as well known, eastern states also own large swaths of state land, and they are generally administered under land management models different from the state trust lands in the West. Indeed, as shown in Table 1, after Hawaii and Alaska, the next four states with the highest percentages of state land ownership in the United States are found in the East: New Jersey (20.9 percent), Florida (16.0 percent), New York (14.0 percent), and Pennsylvania (13.9 percent).⁶ Arizona (13.1 percent) comes next, and Michigan (12.7 percent) follows. The other three states that contain more than 10 percent state land are New Mexico (12.0 percent), Massachusetts (11.1 percent), and Minnesota (11.0 percent).⁷ Compared with state trust lands in the West, eastern state land systems have been much less studied. In 2008, Sally Fairfax wrote that much could be learned from studying state land management across the United States, but that “it is appropriate to be concerned by the enormity of what we do not know about state land management and the need to explore further the full range of tools and lessons that those diverse programs embody.”⁸

Overall, state-owned lands in the United States comprise mainly four different types: state trust lands, state forests, state parks, and state wildlife management areas. State trust lands are managed for multiple uses to provide

revenue for the states. State forest system lands are generally managed for timber harvesting, other revenue-raising purposes, and more dispersed recreational uses such as hiking and hunting. State parks also provide recreational opportunities, but frequently with a greater emphasis on concentrated recreational uses such as picnicking and overnight camping. The purposes of state wildlife management areas include improving the ecological health of the areas and increasing wildlife within them, including both rare species and also more common animals that serve popular hunting and trapping activities.

As shown in Table 1, state trust lands are the most common form of state-owned land in the United States, equaling 42.9 million acres. State forest systems comprise 22.0 million acres, equal to about 12 percent of the total federal acreage managed by the U.S. Forest Service.⁹ Five eastern states—New York, Pennsylvania, Michigan, Minnesota, and Florida—own about half of the total state forest land. Total state lands in state parks equal 10.6 million acres. The largest state park systems by land area are in Alaska, California, Florida, and Texas. New York is second in terms of total visitation.

Since World War II, “wildlife management areas” (sometimes called “game management areas”) have grown most rapidly, partly reflecting aggressive state efforts to acquire such lands. Indeed, there are now more state lands in wildlife management areas—22.7 million acres—than in state forests.¹⁰ The five eastern states of Pennsylvania, Michigan, Minnesota, Florida, and Louisiana each have a million or more acres of wildlife management areas, along with California and Alaska in the West.

Twenty-two states have more than the U.S. average (excluding Alaska) of 5 percent state land. Among these states, 12 are located in the East and 10 in the West. Eastern states contain 41 percent of the total state land in the lower 48 states. As Figure 1 shows, the upper Middle Atlantic Region has high proportions of state land ownership. New York, Pennsylvania, and New Jersey each contain at least 13.9 percent state-owned land, more than any western states except Hawaii and Alaska. Although the proportions are lower and the absolute acreages of state land smaller in New England, several of the states there also have percentages of state land ownership well above the national average of 5 percent for the lower 48 states.

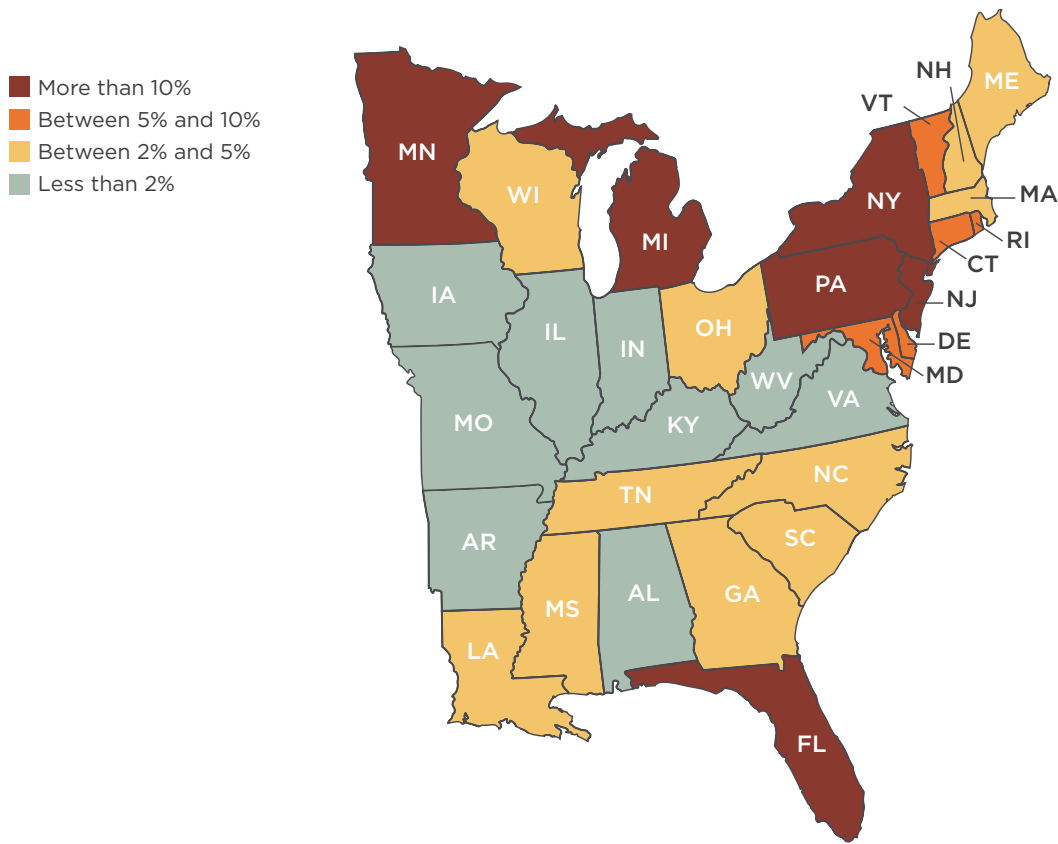
TABLE 1:

ACRES OF STATE-OWNED LANDS IN THE UNITED STATES

State	% of Total Land Owned by the State	Total State-Owned Land (000s of acres)	State Forests (000s of acres)	State Parks (000s of acres)	State Game/Wildlife Management Areas (000s of acres)	State Trust Lands (000s of acres)	Other Lands (000s of acres)
Hawaii	34.2	1,368	678	30	536	n/a ^[1]	124 ^[2]
Alaska	29.0	105,000	2,100	3,300	3,200	1,200	95,200
New Jersey	20.9	984	524	122	338	n/a	n/a
Florida	16.0	5,500	1,100	696	1,400	n/a	2,304 ^[3]
New York	14.0	4,208	787	335	197	n/a	2,889 ^[4]
Pennsylvania	13.9	3,975	2,200	295	1,480	n/a	n/a
Arizona	13.1	9,560	n/a	64	267	9,229	n/a
Michigan	12.7	4,590	3,836	353	362	n/a	39
New Mexico	12.0	9,323	n/a	192	122	9,009	n/a
Massachusetts	11.1	555	290 ^[5]	18	142	n/a	105 ^[6]
Minnesota	11.0	5,586	3,135 ^[7]	237	1,419	707 ^[8]	88
Rhode Island	9.5	63	40	7	14	n/a	2
Washington	9.1	3,871	3,137 ^[9]	112	622	n/a	n/a
Maryland	7.8	484	218	138	125	n/a	3
Connecticut	7.8	241	170	37	32	n/a	2
Delaware	7.6	95	19	26	50	n/a	n/a
Utah	7.6	3,989	n/a	119	470	3,400	n/a
Montana	6.6	6,114	n/a	47	890	5,177	n/a
Wyoming	6.5	4,061	n/a	49	512	3,500	n/a
Vermont	6.1	358	174	55	127	n/a	2
Colorado	5.9	3,656	n/a	172	684	2,800	n/a
Idaho	5.3	2,817	n/a	61	314	2,442	n/a
Wisconsin	4.5	1,572	527	61	450	77	457
Maine	4.0	785	594	85	106	n/a	n/a
New Hampshire	3.7	210	146	12	52	n/a	n/a
Nebraska	3.6	1,776	n/a	73	437	1,266	n/a
Louisiana	3.6	1,038	8	30	1,000	n/a	n/a
California	3.1	3,044	71	1,331	1,173	469	n/a
Tennessee	3.0	790	167	200	400	n/a	23
Georgia	2.8	1,026	38	85	903	n/a	n/a
Oregon	2.8	1,697	800 ^[10]	96	139	660	2
Mississippi	2.6	786	5	18	112	643	8
Oklahoma	2.5	1,109	n/a	33	300	773	3
South Carolina	2.4	462	93	80	260	n/a	29
North Carolina	2.3	798	55	225	481	n/a	37
South Dakota	2.3	1,139	n/a	102	281	756	n/a
Ohio	2.2	569	200	174	195	n/a	n/a
North Dakota	2.1	919	n/a	15	197	707	n/a
West Virginia	1.9	288	63	82	143	n/a	n/a
Missouri	1.8	805	420	200	185	n/a	n/a
Indiana	1.7	395	154	70	123	n/a	48
Arkansas	1.5	493	24	55	379	n/a	35 ^[11]
Virginia	1.4	366	69	73	200	n/a	24
Iowa	1.3	480	44	61	375	n/a	n/a
Alabama	1.2	377	48	48	236	45	n/a
Texas	1.2	2,055	7	627	714	n/a	707 ^[12]
Illinois	0.9	336	21	120	97	n/a	98
Kentucky	0.9	223	48	38	127	n/a	10
Kansas	0.6	289	n/a	32	257	n/a	n/a
Nevada	0.3	200	n/a	78	115	4	3
Total	-	200,425	22,010	10,569	22,740	42,864	102,242

Note: See page 43 for notes for Table 1.

FIGURE 1:
A RANGE OF STATE LAND OWNERSHIP



The Upper Midwest “Lake States” of Michigan, Wisconsin, and Minnesota are another cluster of states with high percentages of government-owned land. More than 11 percent of the land in both Michigan and Minnesota is under state ownership. Wisconsin has 11 percent of its land in a state and local status, but it is unusual in that local counties own the largest part of this land.¹¹ Except for Florida, the southern states contain less than 5 percent state land, and Virginia, Alabama, Kentucky, and Arkansas all have less than 2 percent.

As shown in Table 1, there are seven eastern states with total acreages of state land that represent 11 percent or more of the area of the state: New Jersey, Florida, Pennsylvania, New York, Massachusetts, Michigan, and Minnesota. This report focuses on six of these eastern states as case studies in eastern state land management.¹² The sections that follow summarize the extent and character of these six systems of state land ownership and briefly assess their overall economic and environmental performance.

In contrast to the voluminous writings about federal lands in the West, surprisingly little attention has been devoted to state-owned lands in the East. Unlike state trust lands in the West, there is no book-length study available on the overall history of eastern state lands. What materials can be found are typically sporadic and short histories of individual states and occasional state land agency reports about their own recent activities.¹³ The summary descriptions presented below of state management in the “big six” eastern land-owning states have thus been assembled from such a scattered set of publicly available sources.

NEW YORK

For much of the 19th and early 20th centuries, New York State played a leading role in the history of American public land policy. As early as 1848, Henry David Thoreau observed that “New York has her wilderness within her own borders.”¹⁴ A decade later, Ralph Waldo Emerson famously led a group of fellow transcendentalist scientists and philosophers from Boston to spend a month at what would become known as the “philosopher’s camp” in the Adirondack wilderness, reveling in the wonders of the “primitive” nature surrounding them.¹⁵

The first state park system in the United States was established in New York in 1881. New York set aside the Adirondack Preserve from existing state lands in 1885, followed by the Adirondack Park in 1892, which today includes large amounts of private as well as state land within the park boundaries. In 1894, New York adopted a constitutional amendment declaring that the state lands of Adirondack Park must be maintained permanently in a condition of “forever wild,” leading park historian Paul Schneider to describe them as America’s “first wilderness” protected areas.¹⁶ This occurred many decades before the U.S. Congress enacted the federal Wilderness Act in 1964, illustrating the potential advantages of a federalist system in which states act as “laboratories of democracy.”

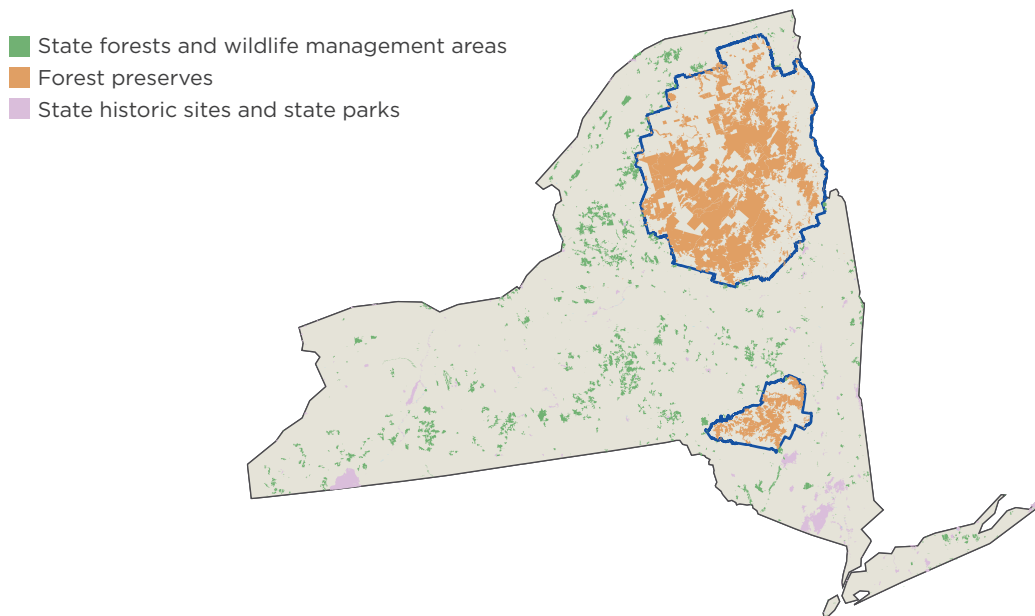
Figure 2 shows state lands in New York. Adirondack Park is in the northeastern part of the state within the famous “blue line,” which is its boundary. Today, the park includes 6 million acres of state and private land, 43 percent of which is state-owned. There is more New York state land in Adirondack Park (2.6 million acres) than there is federal land in Yellowstone National Park (2.2 million acres). The park contains private lands such as local towns, farms, shops and restaurants, tourist resorts, summer camps, railroads, wealthy estates, and other sites of significant human impact. Adirondack Park has around 130,000 permanent residents, and many tens of thousands more people own property and spend parts of their summers there.¹⁷ The private lands and local governments are subject to the regulatory oversight of the Adirondack Park Agency, an instrument of New York state government that also directly manages the state lands.

A distinctive feature of Adirondack Park is that the State of New York pays property taxes to local governments for state lands based on appraisals of the market value of the lands. It also pays property taxes according to the value of state-owned easements on private lands within the park. In 2011, for example, New York paid more than \$75 million in property taxes within Adirondack Park for the 3.4 million acres of state-owned lands plus easements.¹⁸ This is an alternative policy approach to the Payments in Lieu of Taxes (PILT) the federal government now pays in the West based on a funding formula that reflects the extent of federally owned lands in western localities.

New York includes a second forest preserve dedicated to maintaining state lands in a “forever wild” condition. Catskills Park is south of Adirondack Park and closer to New York City, and it has its own “blue line.” The Catskill Forest Preserve of state lands was set aside in the same state action that established the Adirondack Preserve in 1885. Catskill Park itself was created in 1904, which included the original 1885 state lands as well as extensive private lands. The state lands have since expanded to 287,500 acres. The park now also includes 380,070 acres of private land and 40,500 acres of watershed land owned by New York City for the purpose of maintaining its water supply. Of the state land in the park, 51 percent is classified as “wilderness” and 47 percent as “wild forest.”¹⁹

As was the case for most of the Adirondack Preserves, the Catskill Preserves were mostly harvested for timber or used for agriculture in the 19th century. In both preserves, many of the private timberlands were abandoned after they were cut, and they subsequently reverted to state ownership due to the landowners’ failure to pay the property taxes. The state also acquired a large amount of land after the initial Adirondack Park and Catskills Park boundaries were established in 1892 and 1904, respectively.

FIGURE 2:
NEW YORK STATE LANDS



New York also has a state forest system with 787,000 acres that, unlike the Adirondack and Catskill Parks, are managed for multiple uses, including timber harvesting, mineral development, and intensive outdoor recreation. New York acquired most of these state forest lands from private owners, primarily in the 1930s when many farms were failing. The purchased state forests were often initially of poor quality, but New York engaged in an aggressive tree planting and general improvement program, resulting in many mature and healthy forests today.

New York employs diverse forest management practices on its state lands, finding that clearcutting of its forests, for example, can have both economic and ecological advantages. Its state policy explains that “today we better understand how clearcuts, as with all silvicultural options, when applied correctly, may create a positive change to a dynamic forest.” Clearcutting can recreate disturbance regimes that no longer occur naturally but that many plant and animal species require. Thus, “when planned and managed properly, clearcutting and other regeneration cuttings may provide environmental, social and economic benefits, including but not limited to establishing even-aged forest regeneration of shade intolerant species, establishing temporary early successional forest habitat, and satisfying local and regional forest product needs.”²⁰ This flexibility about appropriate forest management tools contrasts with the Forest Service and its management of U.S. national forests, where clearcutting in the 1970s became such a politically charged issue that it has since been tightly limited, regardless of the ecological and other forestry benefits it may offer.

As shown in Table 2, from 2002 to 2012, timber harvests on New York state forests yielded average revenues of \$4.1 million per year, or \$3.30 per acre. In 2009, the management of New York state forests consisted of a small field staff of 35 permanent full-time foresters and forestry technicians and 14 seasonal employees.²¹ Reflecting the lean management style, a 2006 audit by the New York Comptroller’s Office determined that marginally expanding the annual area of timber harvests from state forests by 8,410 acres would yield an additional

TABLE 2:
TIMBER SALE RESULTS, NEW YORK STATE FORESTS

April 1 - March 31	Inventory (Acres)	Number of Sales	Acres	Harvested (MBF)	Harvested (Cords)	Harvested (Tons)	Forest Revenue (Millions)
2012-13	64,752	241	6,466	17,483	26,519	26,279	\$3.4
2011-12	71,309	330	7,032	17,792	25,492	30,428	\$4.7
2010-11	99,381	284	5,471	18,177	21,081	29,010	\$3.1
2009-10	82,787	500	7,242	22,242	22,593	31,390	\$3.1
2008-09	63,966	697	7,729	28,317	12,163	n/a	\$3.9
2007-08	39,299	522	7,000	25,839	15,389	n/a	\$4.2
2006-07	20,660	561	8,158	33,807	11,905	n/a	\$4.8
2005-06	41,428	555	8,684	32,568	17,820	n/a	\$5.2
2004-05	43,753	496	7,560	22,338	24,098	n/a	\$4.5
2003-04	46,733	678	9,935	22,620	32,775	n/a	\$5.1
2002-03	40,298	650	8,112	23,424	24,036	n/a	\$3.8
Average	55,851	501	7,581	24,055	21,261	n/a	\$4.1

Source: New York State Department of Environmental Conservation, "State Accomplishments Report, Fiscal Year 2002 to 2013," n.d.

\$4.9 million in timber revenues per year while requiring salary and fringe benefit expenses of only \$1.2 million per year. Thus, as the Office found, the expansion "clearly" would have been "cost-effective" for the state.²² Indeed, the Comptroller's Office criticized penny-pinching state budget policies that resulted in inadequate staffing and thus prevented many potentially profitable timber sales on New York's state forests.²³ Yet, as shown in Table 2, New York actually saw a trend toward declining harvests from 2002 to 2012. This might reflect several factors, including inadequate funds for timber management, trends of declining wood prices since the 2008-09 Great Recession, and a growing environmental influence on state forest management that opposes timber harvesting in principle.

In 2016, the Bureau of State Land Management of New York confirmed that revenues from timber sales continued to exceed the costs of the sales.²⁴ Interestingly, those positive net timber revenues have not necessarily resulted in detrimental environmental outcomes. Indeed, the state forests of New York State have been fully certified according to the national standards of both the Forest Stewardship Council and the Sustainable Forestry Initiative. Resistance to timber harvesting is therefore not based on significant adverse environmental effects to New York's state forests.²⁵

The 2011 Strategic Plan for New York's state forests seeks to encourage traditional practical considerations, stating that "comparing harvest rates to the net growth rate of the forest provides a valuable yardstick to measure sustainability." Based on this criterion, the plan argues, the state should be increasing harvests. The Strategic Plan rejects "a simplistic approach of cutting below the net growth rate," although funding and personnel shortages have often led to this outcome in practice.²⁶

These features of New York's state forests—goals of revenue generation, environmental certification, and sustainable harvest rates—all stand in contrast to U.S. national forests. Among these federal forests, none are environmentally certified, total timber sale revenues are well below management costs of the timber program, and the Forest Service's total annual timber harvests fall well short of annual total wood growth on the national forests, contributing to the rapid accruals of excess fuels and to fire-prone conditions on many national forests.²⁷

In addition to state forest preservation reserves and state forests, a third significant category of state land in New York is its wildlife management areas, which total 197,000 acres, about 25 percent of the area of the state forests. About 124,000 acres of the wildlife management areas consist of forests and grasslands and another 53,000 acres of wetlands. This more recent state land system partly exists as a result of a large-scale transformation of the New York landscape over the course of the 20th century. At the beginning of the century, the majority of the land in New York was used for farming. As agricultural production shifted to more fertile areas in the Midwest, however, forest regrowth began to replace the abandoned farms. By the end of the 20th century, New York was 63 percent forested.

Wildlife management areas, like many other state lands in New York, were acquired from failing farms and other forms of private ownership. The first significant acquisition funding for wildlife management areas came from a state source, the New York Conservation Fund, created in 1925. Significant additional acquisition funds became available from the federal government in the 1930s as part of national economic recovery efforts during the Great Depression. State wildlife management areas offer opportunities for hunting, fishing, trapping, bird watching, wildlife viewing, and photography. They are also managed for various ecological purposes today, such as recovering the federally endangered Karner blue butterfly.

New York has increasingly recognized that its past forest management policies for acquired state lands—including fire suppression and limits on clearcuts and other logging—have changed the historic composition of its forests. Responding to this reality, New York recently established a “Young Forests Initiative” for its wildlife management areas. As the Department of Environmental Conservation explains, under this initiative its “actions mimic nature,” noting that “there have always been disturbances in the forest,” but they no longer occur without active human management to create them. Indeed, there are few if any “natural” forests in New York. Human actions in one way or another have shaped New York forests for centuries.²⁸

The state’s Department of Environmental Conservation explains that “a healthy landscape has a mosaic of habitat types, including young forests, and supports a diversity of wildlife.” Because more active human management is needed to achieve such a “natural” condition, New York is setting a goal for “young forests” to make up at least 10 percent of each wildlife management area. This will serve to encourage larger populations of the species that depend on young forests, including: songbirds (golden-winged warbler, whip-poor-will, Canada warbler, yellow-breasted chat, and brown thrasher), game birds (American woodcock and ruffed grouse), mammals (New England cottontail and snowshoe hare), and reptiles (eastern box turtle and smooth green snake).²⁹ As New York has increasingly recognized this, it has shown a new determination to aggressively manage the existing forests not only for traditional multiple uses but also for wildlife, ecological, and other purposes. Again, this is in contrast to the Forest Service’s understanding of “ecosystem management” in the national forests, in which the agency rejects the idea of active human management to achieve a “natural” condition, instead preferring to let nature run its course. New York, however, accepts that it must actively “mimic” nature.³⁰

A fourth category of New York state lands is the state park system, which includes 180 parks and 35 historic sites covering 335,000 acres.³¹ As popular recreational destinations, New York state parks attracted 62 million visitors in 2014. This was almost as many as the nearly 69 million visitors to all of the 59 officially designated national parks combined that year, including Grand Canyon, Yosemite, Yellowstone, and Glacier. It is also equal to 21 percent of the 293 million visitors to all 376 National Park System units that year, even including automobile traffic that officially accounts for 28 million “visitors” on four national parkways. Total expenditures of the

New York state park system in 2014-15 were \$180 million; revenues included \$107 million from the New York State general fund, with the remainder covered from fees, other internally generated revenues, and federal sources.³²

Among the state park systems in the United States, New York's ranks first in total number of park units, first in number of campsites, second in total visits, and fifth in total acreage. Niagara Falls State Park attracted more visits than Grand Canyon and Yosemite National Parks combined. Besides recreation, the U.S. national parks also serve important ecological and historic preservation functions that Americans value highly, even if it is difficult to assign any dollar value to them. But in terms of direct recreational visits of Americans per acre or per management dollar spent, New York's state parks far exceed the National Park System.

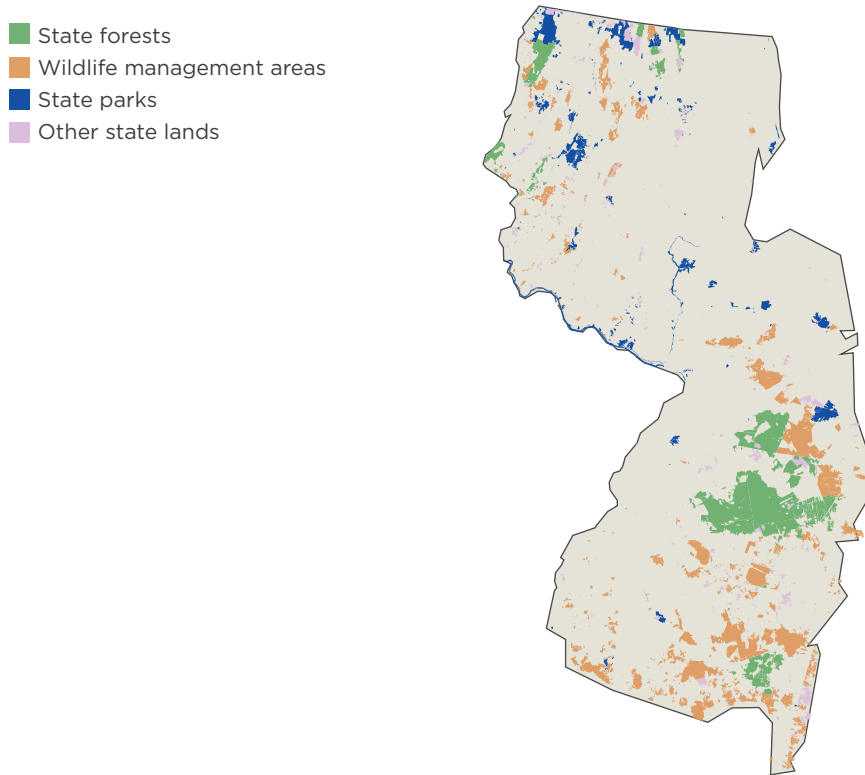
In total, the Adirondack and Catskills Forest Preserves (2.9 million acres combined), the state forest system (787,000 acres), the state wildlife manage areas (197,000 acres), the state park system (335,000 acres), plus some minor categories of state lands, comprise more than 3.9 million acres of New York State lands, equal to 14 percent of the state's land area. As shown in Table 1, New York ranks fourth among the lower 48 states in terms of percent of state land ownership, although it ranks first in historic significance and public visibility of its state-owned lands. New York has also acquired 900,000 acres of private land easements. New York's use of easements is another area in which it differs from longstanding federal agency practice. Federal land management has long emphasized purchases of land ownership outright in the West—many of them funded by the Land and Water Conservation Fund—even when the creative use of easements could be as recreationally and environmentally effective, cost less, and maintain the lands in private hands for tax and other purposes.³³

NEW JERSEY

New Jersey is the fourth smallest state after Connecticut, Delaware, and Rhode Island, covering less than one-fifth of the land area of New York. Yet, New Jersey surprisingly has its own large wilderness area to rival the Adirondack and Catskills Forest Preserves of New York. Most of the Pine Barrens of southern New Jersey have less development and many fewer permanent residents than Adirondack Park. Author John McPhee, however, found these lands and their few residents so fascinating that he devoted an entire book to them in 1968.³⁴ He explained that “in the central area of the Pine Barrens—the forest area that is still so undeveloped that it can be called wilderness—there are only fifteen people per square mile. This area, which includes about six hundred and fifty thousand acres, is nearly as large as Yosemite National Park.” There are elevated parts of the Pine Barrens, McPhee observed, “where, in a moment's sweeping glance, a person can see hundreds of square miles of wilderness.”³⁵ Owing partly to its forbidding character and fewer recreational attractions, New Jersey was much slower than New York State to act to protect its wild lands.

In the late 19th century, the American industrialist Joseph Wharton—best known for donating the funds to found the Wharton School of Business at the University of Pennsylvania—bought around 100,000 acres of land in the New Jersey Pine Barrens, which lie almost directly east of Philadelphia. He was hoping to develop a water supply for the city from the Pine Barrens' immense underlying body of unusually clean water. Those plans were unsuccessful, however, due to opposition from New Jersey officials who thought that the state's water resources should be retained for internal use, leaving the Wharton lands as an undeveloped wild area until the state eventually purchased them in 1955. These lands would become the basis for Wharton State Forest, the largest unit of state land in New Jersey, which now includes 123,000 acres.

FIGURE 3:
NEW JERSEY STATE LANDS



In 1955, there was no overarching framework of governance for the public and private lands of the Pine Barrens. In 1978, however, Congress designated 1.1 million acres as the Pinelands National Reserve, the first national reserve within the National Park System (a management category that would soon be employed on a much wider scale in Alaska). New Jersey followed up by enacting the Pinelands Protection Act in 1979, creating a new state land category, the Pinelands Area. This area is managed by the Pinelands Commission, which, despite its status as a state agency, has the lead role in managing the federal preserve. When New Jersey designated the Pinelands Area, 265,000 acres were in state ownership. By 2014, the state had increased its land holdings to 460,000 acres through an ambitious program of land acquisition that used both federal and state funds.³⁶ Altogether, including acreage outside the state-managed Pinelands Area, about 500,000 acres or approximately 45 percent of the entire Pinelands National Reserve are now in federal or state ownership.³⁷

Legally a state agency, the Pinelands Commission includes seven members appointed by the governor of New Jersey (one member from each of the seven counties that have a physical presence within the Pinelands) and one federal member designated by the Secretary of the Interior. Lands outside the boundaries of the Pinelands Area but within the federal Pinelands National Reserve include three state wildlife management areas and two federal wildlife refuges. Fort Dix, McGuire Air Force Base, and a Naval Air Engineering Station also jointly occupy 42,000 acres within the northern part of the National Reserve.

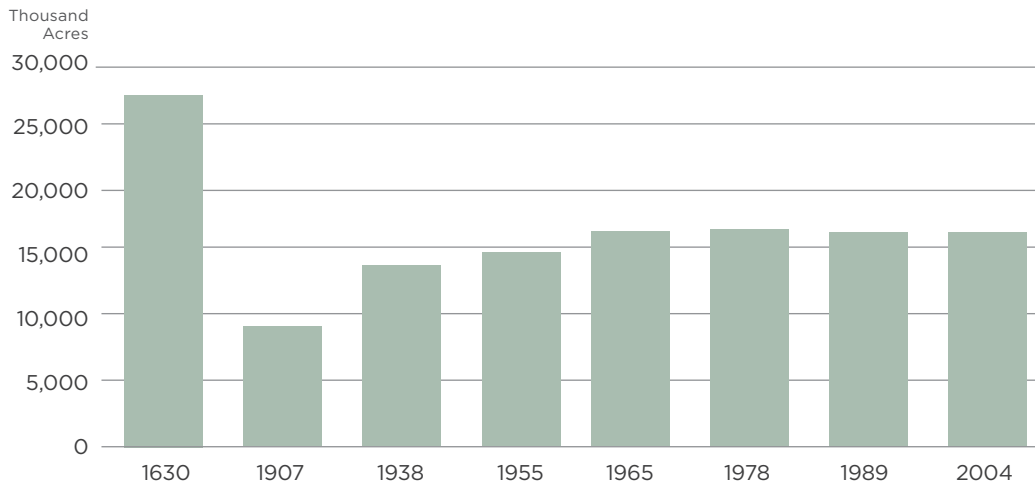
The public and private lands of the Pinelands National Reserve represent about 20 percent of New Jersey's total land area. The Reserve includes not only the large areas of land with wilderness characteristics that fascinated McPhee but also 56 communities and at least parts of the aforementioned seven counties. It has about 500,000 permanent residents, most of them living in communities located on the periphery of the reserve. Although it is a joint federal-state effort, the Pinelands National Reserve resembles Adirondack Park in that a state agency oversees the management of a large swath of the state that includes about half private and half state lands, as well as many local governments. Such a model might offer some helpful governance and land-use management lessons for the federal government and western states that manage similarly important recreational and environmental assets within a large area of mixed public and private land ownership.

Besides its governance model, another innovative feature of the Pinelands Area is its market system of “transferrable development rights.” Since the 1970s, a number of students of land-use regulation have proposed creating such rights as a solution to the “windfall or wipeout” problem.³⁸ If a land-use plan designates certain areas with strict limits on development, private landowners in such areas will suffer large losses in land value (the “wipeouts”), yet if other areas are planned for intensive development, the landowners in these areas may reap large increases in land value (the “windfalls”). Seeking to address this large equity problem as a precondition for land-use plans that are politically acceptable, a system of transferrable development rights assigns credits to landowners in wipeout areas that can be sold to increase legally permissible housing densities in windfall areas. By selling their transferable credits, wipeout landowners are thus compensated at least in part for the tight government restrictions imposed on them.

Although jurisdictions have been adopting systems of transferrable development rights since the 1970s, the results have typically been disappointing. Perhaps the most successful system of transferrable development rights in the United States, however, is in the Pinelands Area. A key to its success was the authority of the Pinelands Commission as a state agency to designate clear local boundaries for areas where private development would be tightly restricted and areas where transferred development credits would be accepted (and indeed would be necessary for high-density development). As the Pinelands Commission explains, “the program works by allocating development credits to landowners in the Preservation Area District, Agricultural Production Areas, and Special Agricultural Production Areas. The credits can be purchased by developers owning land in Regional Growth Areas and used to increase the densities at which they can build.” As of 2016, landowners had received transferrable development rights as compensation for tight limits on development on 52,000 acres of their land. The Pinelands Commission actively worked to facilitate market trading in transferrable rights by creating a Pinelands Development Credit Bank that “can buy and sell credits, guarantee loans using credits for collateral, and maintain a registry of credit owners and purchasers.”³⁹ Again, it was at the state level in a system of mixed state and private ownership where the management capacity and flexibility existed to make this innovative land-planning tool a success.

Besides Wharton State Forest and other state forests and lands within the Pinelands Area (460,000 acres) in southern New Jersey, the state owns additional state forests (64,000 acres) elsewhere (see Figure 3). There are also significant amounts of land designed as wildlife management areas (338,000 acres) and state parks (122,000 acres). The total area of state-owned lands in New Jersey adds up to 970,000 acres, 20.6 percent of the land area of this small state and a higher percentage of state land ownership than any other state except Hawaii and Alaska.

FIGURE 4:
AREA OF FOREST LAND IN PENNSYLVANIA



Source: Pennsylvania Department of Conservation and Natural Resources, *Pennsylvania Statewide Forest Resource Assessment* (June 2010)

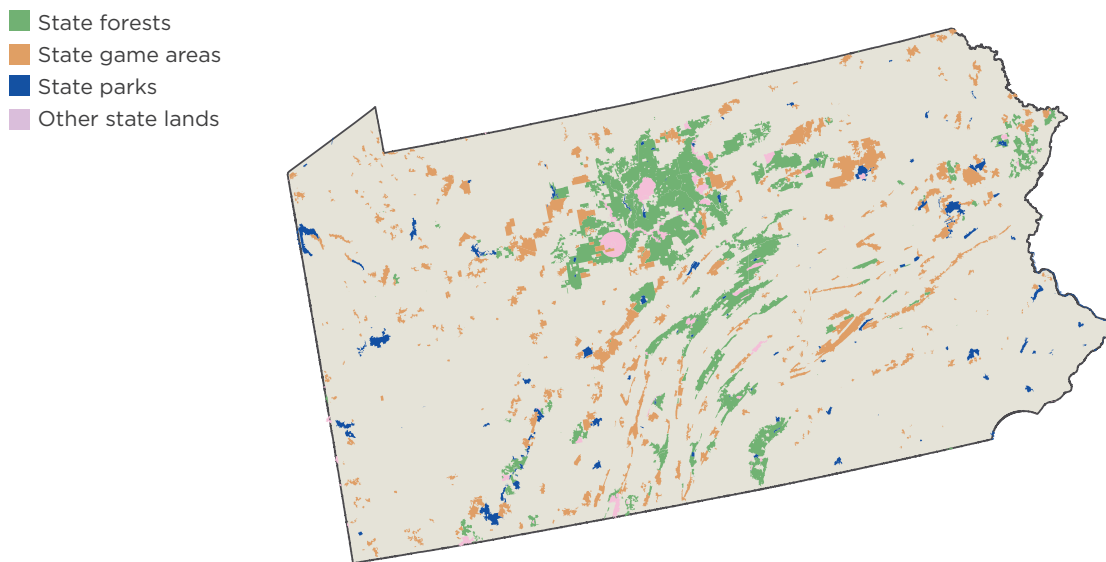
PENNSYLVANIA

Pennsylvania, like most eastern states, was a sea of forests prior to European settlement. Over the course of the 19th century, settlers intensified the cutting of Pennsylvania forests to open lands for agriculture and to provide wood supplies. By the end of the century, however, the timber resources had been largely exhausted. As shown in Figure 4, the area of Pennsylvania forested land reached a low point in the early 20th century but has been increasing since, although it is still well short of the pre-European forests. The cut-over and abandoned timberlands played a large role in the partial restoration of Pennsylvania forests during the 20th century.

The history of American forests since the late 19th century reflects a recurring tension between the preservation of forests as natural areas and their utilitarian management for human purposes according to principles of multiple use and sustained yield. This tension was reflected in the differing viewpoints of John Muir, who founded the Sierra Club in 1892 and was a leading advocate for the creation of Yosemite and other national parks, and Gifford Pinchot, who became the first chief of the U.S Forest Service in 1905. In the early 20th century, the utilitarian conservationist views of Pinchot usually prevailed, as seen in the 1913 Congressional decision to build Hetch-Hetchy Dam (which Pinchot favored and Muir strenuously opposed) in Yosemite to supply water and electricity to San Francisco.⁴⁰

There was, however, one salient exception: New York, which, as discussed above, set aside large areas of state land in the Adirondack and Catskills Parks in the late 19th century with a constitutional requirement that the preserves be kept “forever wild.”⁴¹ Unlike New York, Pennsylvania followed Pinchot’s utilitarian conservationist tradition of active forest management for human purposes. Joseph Rothrock, the leading architect of the Pennsylvania state forest system, declared in the late 19th century that “the art of forestry is the production of the largest crop of the most desirable timber in the least time and at the least expense on land that is unsuited for remunerative agriculture, or for profitable grazing.” Such land, he thought, ideally should be acquired by the

FIGURE 5:
PENNSYLVANIA STATE LANDS

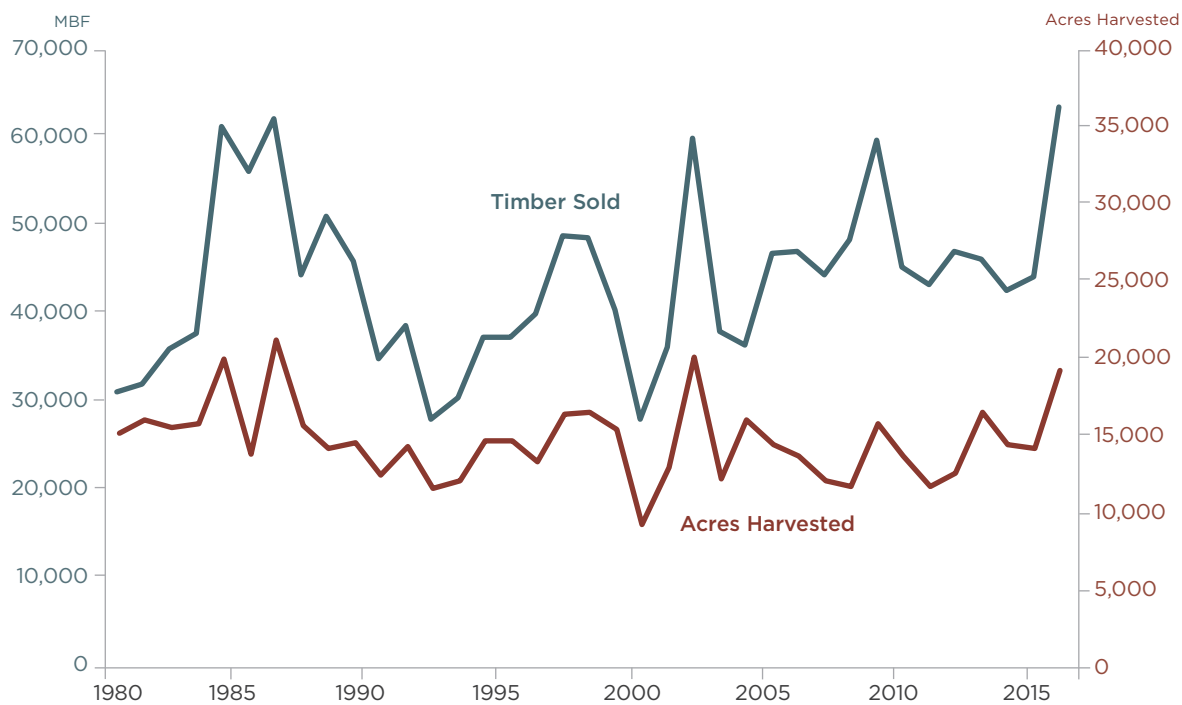


state of Pennsylvania to be publicly managed as state forests.⁴² In the 1890s, Pennsylvania began an aggressive program of acquiring failed agricultural lands and abandoned cut-over timberlands, either receiving them through outright reversion to the state because landowners failed to pay taxes or purchasing them at low bargain prices.

By 1912, the state forests had grown to include 966,000 acres, a figure that grew to more than 1.1 million acres in 1922 and then to 1.8 million acres by 1955—not much less than the present state forest acreage of 2.2 million acres (4.9 percent of the total area of Pennsylvania). Reflecting Rothrock’s continuing influence, state law in Pennsylvania during the 20th century directed that the goal of state forest management should be “to provide a continuous supply of timber, lumber, wood and other forest products; protect the watersheds; conserve the water and regulate the flow of rivers and streams of the state; and to furnish opportunities for healthful outdoor recreation to the public”—quite similar to what Gifford Pinchot had declared would be the purpose of the Forest Service in 1905.⁴³ Pinchot was not only a central figure in Forest Service history, but he also served as Pennsylvania Commissioner of Forestry from 1920-22, overseeing management of the state’s forests. Pinchot successfully ran for Governor of Pennsylvania in 1922 and continued to exert considerable influence on state forest management during his two terms.

Pennsylvania and New York hold similar total amounts of state land (see Figure 5). But given their divergent management philosophies and the commitment of so much of New York’s state lands to “natural” forest preserves in parks outside its state forests, Pennsylvania’s state forest system is almost three times as large as New York’s. As shown in Figure 6, Pennsylvania has also shown a continuing commitment to timber production. Following significant year-to-year variations, timber sale volumes on Pennsylvania state forests rose over the past four decades, from 31.2 million board feet in 1980 to 63.2 million board feet in 2016. Given the recovery of formerly cut-over Pennsylvania forests and the increasing forest acreage over the course of the 20th century, the capacity for timber

FIGURE 6:
PENNSYLVANIA STATE FORESTS: ACRES HARVESTED AND TIMBER SOLD



Source: Commonwealth of Pennsylvania, Department of Conservation and Natural Resources, Bureau of Forestry, *State Forest Resource Management Plan* (2003); Pennsylvania Department of Conservation and Natural Resources, 2016 *State Forest Resource Management Plan*; Personal correspondence with Robert P. Beleski, Pennsylvania Department of Conservation and Natural Resources, December 6, 2017.

harvesting has grown on Pennsylvania’s state forests. This upward harvest trajectory also partly reflects a determination by Pennsylvania foresters to maintain an aggressive harvesting policy for ecological reasons in addition to the economic benefits they produce. Paradoxically, a “natural” forest condition may only be achievable today by actively managing the lands for that purpose—a reality the Forest Service has yet to incorporate into its policies.

As shown in Figure 7, beginning in 1965, levels of timber harvests on U.S. national forests showed a similar pattern to that of Pennsylvania state forests until about 1990, which marked a point of sharp departure. Timber harvests on the national forests essentially collapsed throughout the 1990s, falling from their longstanding level of about 10 billion board feet per year to less than 2 billion board feet annually in the early 2000s, where they have remained. By contrast, timber harvests on Pennsylvania state forests were higher from 2008 to 2016 than they were from 1990 to 1995. From 2000 to 2008, Pennsylvania state forest timber harvests earned on average \$32.4 million per year. Since 2008, state forest timber revenues have declined, mainly reflecting declining wood prices.

What explains this large divergence between the trajectories of Forest Service and Pennsylvania state forest timber harvests since 1990? One possible explanation reflects the fact that the Forest Service deliberately departed from its traditional conservationist management philosophy of multiple use and sustained yield around that same time. Under strong pressure from environmental organizations and other outside forces such as the federal judiciary, the Forest Service shifted to a new philosophy of “ecosystem management.” Rather than focusing on

FIGURE 7:
TIMBER HARVESTED ON U.S. NATIONAL FORESTS



Source: U.S. Forest Service

human benefits, ecosystem management emphasized achieving a desirable ecological character of the forest as the basic goal itself. The stated aim is to achieve an ecological condition variously characterized as “healthy,” “historically pre-European,” “sustainable,” “biodiverse,” and other such terms of art, each seeking to give more concrete meaning to the idea of protecting the “intrinsic value” of a “natural” forest condition.

The subsequent inability of the Forest Service to operationally define these terms, however, has contributed significantly to the management gridlock and paralysis that has afflicted the agency ever since.⁴⁴ A leading example of such problems is the fate of its decimated timber program with its radically reduced levels of timber harvest and timber revenues. The state of Pennsylvania, by contrast, continued to operate according to its traditional principles of multiple use and sustained yield, which included timber as a main use of the state forests, and its timber management has thrived economically.

Moreover, Pennsylvania has not had to sacrifice forest health in order to maintain its timber program. Indeed, timber harvesting has often been critical to maintaining forests that could effectively and sustainably serve economic and ecological purposes, at the same time making measures to counter other negative human impacts on the condition of the state forests possible, such as fire suppression. Like most eastern state forests, Pennsylvania forests are certified as meeting standards of professionally and environmentally responsible management—in its case by the Forest Stewardship Council (FSC). In 2007, the President of the Pinchot Institute, Alaric Sample, wrote:

In 1996, the Pinchot Institute embarked on a long-term research project to see whether certification programs—originally developed to guide forest management and timber harvesting by private companies—could also help improve forest management on public lands designated to protect a wider array of natural resource and environmental values. The first major project involved the independent audit of the entire 2.1 million acre [now 2.2 million acre] state forest system in Pennsylvania. Based on this evaluation, some important corrective actions were needed, and the necessary actions were taken. Today, Pennsylvania’s state forest lands are the world’s largest single body of certified forest—more than 3,000 square miles (8,400 square kilometers). More importantly, it is widely acknowledged by conservation organizations, forest industry, and state forestry agency officials themselves that these public forests are being better managed now, and much of the past legal and policy controversy has subsided.⁴⁵

At the national level, however, as noted above, no U.S. national forest has sought to receive such a certification for forest management. Indeed, the Forest Service’s turn to ecosystem management has coincided with a continuing deterioration of management quality for the national forests since 1990. In 2007, the Pinchot Institute released the results of in-depth case studies of five U.S. national forests, concluding that none could meet widely accepted forest certification standards. The report found that the Lakeview Federal Stewardship Unit (LFSU) within the Fremont-Winema National Forests and the Mt. Hood National Forest (MHNF) in Oregon “have not been able to deal with overstocked conditions that pose risk of disease, pest outbreak, and stand-replacing wildfires.”⁴⁶ More specifically, the Pinchot investigative teams found that:

The main issue driving findings of non-conformance [with certification standards]... related to findings under Criterion 5.6, concerning overstocked stands and associated forest health risks... Both the LFSU and MHNF have extensive areas of overstocked stands. The condition of these stands poses risks of disease and pest outbreak, and stand-replacing fires. For a variety of reasons the forests have not been able to effectively ameliorate these conditions, leading to CARs [corrective action requests by the Pinchot team] on both forests. The CARs ask the forests to develop strategies to substantially improve conditions of these stands. SCS [Scientific Certification Systems] asserted that the Mt. Hood [National Forest] was simply not thinning enough within overstocked stands to reduce forest health threats. Programmed Sale Quantity (PSQ) on the MHNF is currently 64 million board feet. Actual rate of harvest is less than half that, or 25 mmbf [million board feet]... The actual rate ... falls well below the amount that would be necessary to deal with forest health issues.⁴⁷

Partly reflecting a longstanding Congressional abdication of statutory responsibility, the failure of the Forest Service to make available to its land managers the tools to achieve significantly higher levels of environmentally beneficial timber harvests, as the Pinchot investigators concluded, was depriving it of a necessary management instrument and the flexibility to sustain forest “health.” Unrelated to any certification review process, other observers have long recognizing the Forest Service’s widespread failure to improve the state of national forests in the West.⁴⁸ In a 2002 report, the Forest Service itself admitted that it was hemmed in by a byzantine set of executive, congressional, judicial, and other obstacles that prevented it from dealing effectively with the major problems of the national forests. The agency described that it was beset by a “costly procedural quagmire” in which as much as 40 percent of individual national forest work consisted of “planning and assessment”—forms of official compliance

with procedural requirements that did not yield corresponding practical benefits for the national forests on the ground. In summary, its own view was that “unfortunately, the Forest Service operates within a statutory, regulatory, and administrative framework that has kept the agency from effectively addressing rapid declines in forest health.”⁴⁹ Although the Forest Service pleaded for congressional and executive action to give it the management tools it needed to address such problems, little has changed almost 15 years later.⁵⁰ This stands in contrast to the circumstances of Pennsylvania’s state-owned forests over this period.

Owing to the state’s large-scale land acquisitions in the 20th century, the Pennsylvania Game Commission manages another large system of state lands. State game management lands now include nearly 1.5 million acres, an area almost two-thirds as large as Pennsylvania’s state forests. The Game Commission has a more narrowly defined mission than the multiple-use goals of the state forests: “To manage all wild birds, mammals and their habitats for current and future generations.”⁵¹ This mission is somewhat comparable to that of a federal wildlife refuge as managed by the U.S. Fish and Wildlife Service. In practice, however, Pennsylvania’s game lands are managed more flexibly than the federal wildlife refuges. The game management lands, for example, have produced timber harvest output that is about 40 percent of the level of Pennsylvania’s state forests, partly reflecting the fact that 88 percent of state game lands are forested.

Unlike the Forest Service and other federal land agencies, the Game Commission sees little tension between active forest management and the commission’s primary purpose of supporting wildlife populations. Indeed, the view of the Game Commission is that “in many cases, timber management is required to provide sustainable wildlife habitat; humans today have impacted Pennsylvania’s forests so fundamentally that they cannot be expected to function in a healthy way without [active] management.”⁵² A major indirect benefit is the timber-sale revenues the agency receives. As shown in Table 3, in fiscal year 2006-07 (the last year before the 2008 financial crisis and the plunge in wood prices that followed), the timber harvest was 22.2 million board feet, yielding revenues of \$16.4 million from state game management lands.⁵³

The timber revenues are retained by the Game Commission to help cover its management costs, providing 20 percent of all commission revenues over the 10-year period shown in Table 3. By contrast, while the Forest Service retains some timber-sale revenues for specific purposes such as reforestation of harvested timberlands, national forest timber revenues mostly go to the federal treasury and to local counties where the sales are held (25 percent of the total). In Pennsylvania, Game Commission revenues have normally been sufficient for the commission to operate on a self-funded basis, once revenues from hunting licenses and other fees, federal funds, and other revenue sources besides timber are also included. In 2006-07, for example, total Game Commission revenues were \$69.3 million while total expenditures were \$68.7 million. On the U.S. national forests, however, there is no agency expectation that any individual national forest should seek to cover its expenses with its revenues.⁵⁴ Indeed, most national forests fall far short.⁵⁵

Although not as historically significant as timber revenues, the Pennsylvania Game Commission has also generated significant revenues from an active oil and gas leasing program. The relative importance of the two revenue sources, moreover, has been changing recently. While timber revenues have declined since 2008 due to low wood prices, rising revenues from natural gas leasing have compensated for the losses. Large areas of Pennsylvania game lands are above the Marcellus shale gas formation, which has become a major source of natural gas production in the United States since 2008. Over fiscal years 2011 to 2014, revenues from Game Commission oil and gas leases have soared from \$4.7 million to \$22.1 million. Whereas timber revenues had long provided around

TABLE 3:

PENNSYLVANIA GAME COMMISSION: TIMBER AREA, HARVESTS, AND REVENUES

Fiscal Year	Acres Harvested	Volume Harvested (MBF)	Board Feet/Acre	Timber Revenue (Millions)	Game Fund Revenue (Millions)	Percent of Total Revenue
1999-2000	7,112	21,956	3,087	\$16.1	\$51.8	31.1
2000-2001	6,160	17,669	2,898	\$14.7	\$64.8	22.7
2001-2002	5,792	18,728	3,233	\$13.0	\$67.0	19.4
2002-2003	5,850	19,114	3,267	\$12.1	\$63.4	19.1
2003-2004	4,418	12,785	2,894	\$7.3	\$63.4	11.5
2004-2005	5,492	16,889	3,075	\$14.9	\$63.6	23.4
2005-2006	5,190	17,824	3,434	\$16.4	\$73.9	22.2
2006-2007	6,292	22,226	3,532	\$15.0	\$73.8	20.3
2007-2008	4,944	18,265	3,694	\$11.7	\$74.9	15.6
2008-2009	4,766	15,919	3,340	\$5.4	\$69.3	7.7

Source: Michael Jacobson, Bruce Lord, Marc McDill, Andrew Kleit, Terry Engelder, and Audrey Broucek, *Examination of Current and Future Costs and Revenues From Forest Products and Oil, Gas, and Mineral Extraction on Pennsylvania Game Commission Lands (PGC)*, submitted by the Pennsylvania State University to the Pennsylvania Legislative Budget and Finance Committee, January 14, 2010.

20 percent of total Game Commission revenues, oil and gas revenues in fiscal year 2014 equaled about 20 percent of the total commission budget of \$100.5 million.⁵⁶ Fracking to produce natural gas has become controversial in some circles in Pennsylvania, leading Democratic governor Tom Wolf to ban new oil and gas leases on state forests and parks. But new leasing has continued on state game management lands, which are farther removed from the governor's direct control.

The Game Commission has not only used oil and gas development to raise its revenues to cover its management costs but also to expand its holdings of wildlife habitat. In fiscal year 2012, the Commission's largest habitat acquisition was 6,200 acres in Hamlin and Keating Townships. The funds were provided by Pennsylvania General Electric Company, which was in the process of obtaining new oil and gas rights on state game lands. The newly acquired acreage was provided as compensation for expected new oil and gas disturbances—which themselves affected a much smaller area than the newly acquired land.⁵⁷

This kind of state-level flexibility and pragmatism would not be possible on a federally owned and managed wildlife refuge. Oil and gas development can occur on some national refuges where the subsurface mineral rights are privately owned or where wells can be drilled outside the refuge boundaries. But in other circumstances, the U.S. Fish and Wildlife Service does not allow oil and gas development in wildlife refuges. Here, again, federal land managers would do well to take some lessons from state management. Developing oil and gas could provide significant new revenues to serve the purposes of individual federal refuges, as well as the wider financial needs of the national refuge system as a whole.

In summary, the state forests of Pennsylvania include 2.20 million acres, the state game management lands include 1.48 million acres, and the state parks include 295,000 acres. In total, these state-managed lands in Pennsylvania comprise 3.96 million acres, equal to 13.9 percent of the total state land area.

MICHIGAN

When Michigan became a state in 1837, it was in essence blanketed with forests. It was said that a squirrel could traverse the state without touching the ground. Given its immense forest resources, Michigan was destined to play an outsized role in the 19th century history of American forestry. In 1839, New York replaced Maine as the leading state for timber harvesting; in 1860, Pennsylvania replaced New York; and in the 1870s, Michigan replaced Pennsylvania and maintained its position as the leading timber state into the 1890s. The three “Lake States”—Michigan, Wisconsin, and Minnesota—provided much of the wood that helped power rapid U.S. economic growth after the Civil War and into the early 20th century.

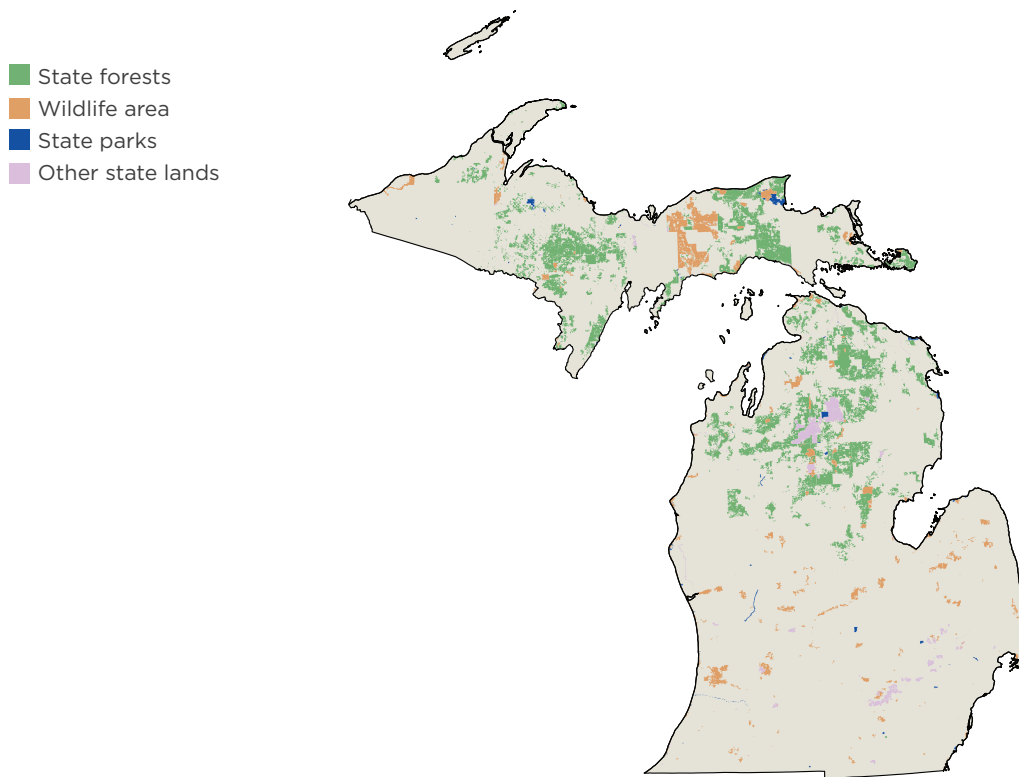
By 1910, however, there were few Michigan forests with large amounts of marketable timber remaining. Over the previous 70 years, about two-thirds of the original vast area of Michigan timberlands had been cut, and one-third had been consumed by fire (sometimes on the cut-over lands themselves, causing further damage). Not only did these events destroy forest resources, but they also eliminated much of the wildlife in Michigan, including bison, elk, woodland caribou, cougar, wild turkey, passenger pigeons, trumpeter swans, fishers, and the American marten.⁵⁸

As in New York and Pennsylvania, after the timber had been cut in Michigan, much of the land was seen as having no further value. Indeed, it was often abandoned altogether. According to Michigan law, if a landowner failed to pay property taxes for five years, the land reverted to state ownership. Large areas of Michigan forests were also cut to clear land for agriculture. But in the timber-rich pine forests of the Upper Peninsula and the northern half of the Lower Peninsula, the soil was poor and the land typically incapable of sustaining farming for more than five to 10 years, which frequently resulted in abandonment. Between 1893 and 1920, 2.3 million acres (about 6 percent of the total area of the state) reverted to state ownership.⁵⁹ Michigan sold 445,000 acres of the reverted lands, but 190,000 of these acres would later revert to the state yet again.

Michigan’s reverted lands were initially placed in the hands of the state auditor general. In order to establish a state administrative presence, the auditor general began transferring some of the reverted lands to a new State Domain Commission. By 1920, the commission held 650,000 acres, which were assigned that year to be the responsibility of a new Conservation Department (today the Department of Natural Resources). During the 1930s, additional areas of farmland failed and were abandoned and thus reverted to state ownership or put up for sale for minimal amounts. By the end of the decade, the state forests had reached around 3 million acres. Later acquisitions would bring the total area of the Michigan state forests to their present 3.9 million acres, the largest state forest system in the United States. Although most of the state lands were in poor condition and had little or no marketable timber at the time of their acquisition, Michigan would embark on an ambitious program of reforestation that has resulted in many state forests stocked with trees up to 80 years old today.

Although the federal government could not acquire reverted lands for free, it could and did buy large areas of denuded land in Michigan at bargain prices. Huron National Forest was created in the Lower Peninsula in 1909 from land holdings that one historian describes as “scattered areas of the poorer timberlands which were considered worthless by private timberland buyers.” With the enactment of the Weeks Act in 1911, the Forest Service received clear congressional authority to acquire land for the establishment of a system of eastern national forests. This was in contrast to the national forests in the West, where the land never left federal ownership. Establishing a national forest in the West required a federal act of ending land disposal and assigning management responsibility to the Forest Service.

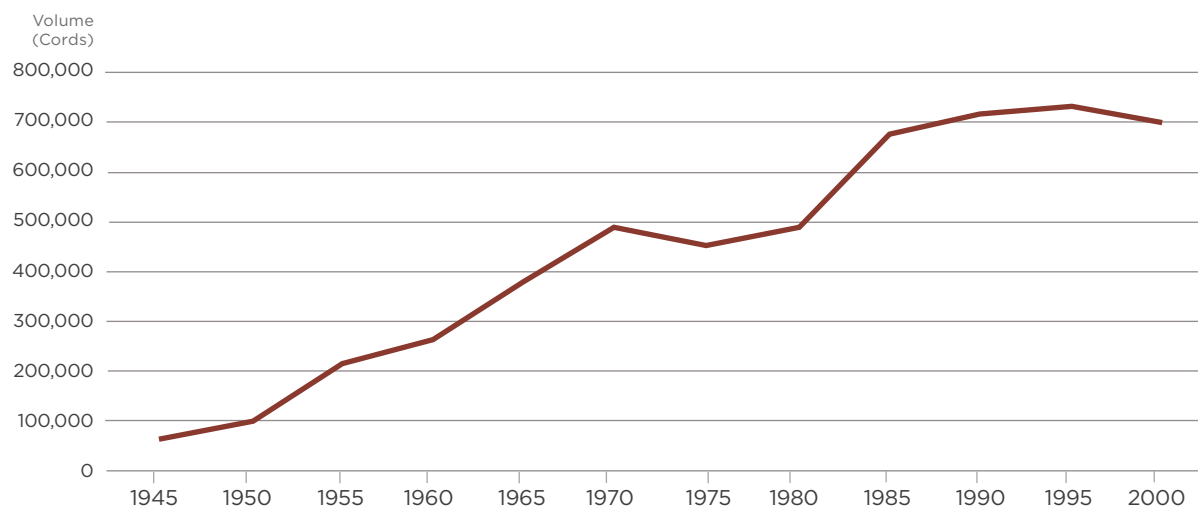
FIGURE 8:
MICHIGAN STATE LANDS



In Michigan, additional Forest Service acquisitions during the 1930s resulted in the creation of two new national forests, Ottawa National Forest in the Upper Peninsula and Manistee National Forest in the Lower Peninsula (which was later consolidated with Huron National Forest for administrative purposes). The total area of Michigan national forests now equals 2.9 million acres, the largest national forest acreage of any eastern state. Combined with the 3.9 million acres of state forests that often surround and are intermingled with the national forests, total state and federal forests of Michigan equal 6.8 million acres. As seen in Figure 8, these public forests are almost all located in the upper half of the Lower Peninsula and in the Upper Peninsula. In these parts of Michigan (where only about 15 percent of the state population lives), state and federal forests cover almost 30 percent of the total land area.

Since 1990, as shown in Figure 7, the Forest Service has largely abandoned timber harvesting as a management purpose in national forests under its new philosophy of ecosystem management adopted in the 1990s. Michigan, however, has maintained a traditional conservationist management philosophy on its state forests. As shown in Figure 9, Michigan timber harvests demonstrated a stable upward trend from 1945 through the 1980s and then stabilized at about 700,000 cords (around 350 million board feet) per year through 2004. By 2015, harvests had further increased; the Forest Resources Division (the manager of Michigan state forests) offered just over 1 million cords of timber (around 500 million board feet) for sale in 2015.

FIGURE 9:
MICHIGAN STATE FOREST VOLUME SOLD



Source: *Michigan State Forest Management Plan* (2008)

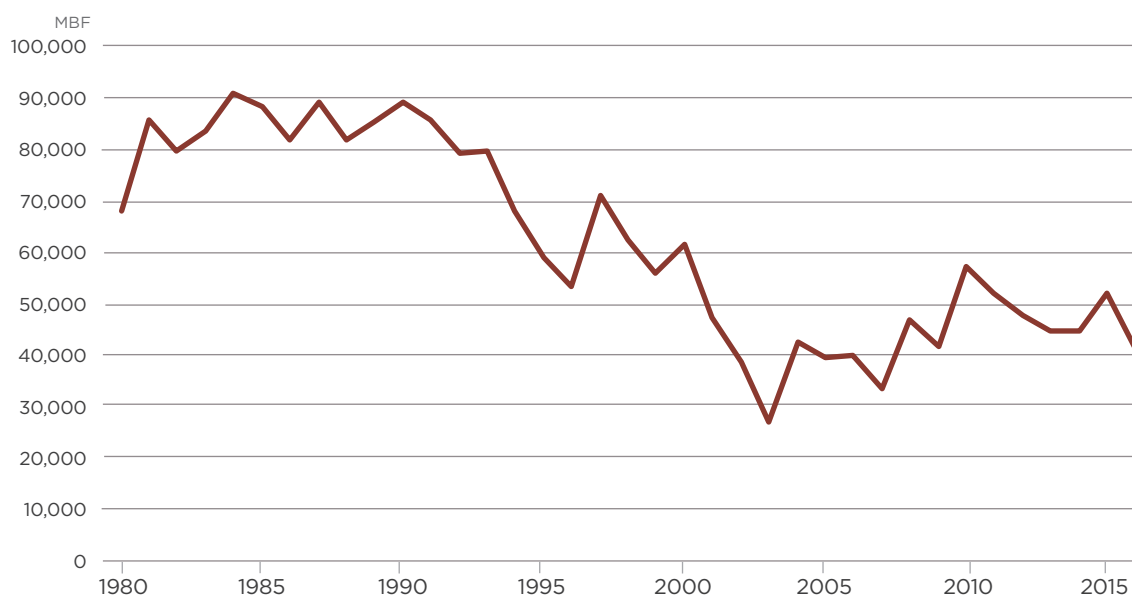
By comparison, recent timber harvests on national forests located in Michigan, which are typically intermingled with state forests, have been around half of their 1990s levels. Figure 10, for example, shows the levels of timber harvests from the Huron-Manistee National Forest on the Lower Peninsula; the harvest there fell from more than 80 million board feet in 1990 to less than 40 million board feet in the early 2000s and then rebounded somewhat to 48 million board feet in 2015.⁶⁰ This 40 percent decline in national forest timber harvests compares with a timber harvest increase on state forests—some of them directly adjacent to the national forests—of about 40 percent over the same period.

Revenues from 2015 state timber harvests brought \$49 million to Michigan.⁶¹ This revenue went to the state Forest Resources Division, which operates under a goal to fund its own operations. In 2013, timber revenues financed 67 percent of the total costs of the Division. Other sources of Division funding included federal grants that covered 16 percent of its budget and miscellaneous sources that covered 9 percent, leaving the general fund of the State of Michigan responsible for only 8 percent.

These numbers stand in stark contrast to the management of U.S. Forest Service. U.S. national forests are almost 50 times larger in area than Michigan state forests, but in 2015, timber sale offerings from Michigan state's forests were equal to 18 percent of the total timber offerings of the Forest Service nationwide (2.8 billion board feet); moreover, timber revenues from state forests were equal to about 30 percent of the total Forest Service timber revenues that year (\$162.7 million). Whereas timber revenues from Michigan state forests were sufficient to cover 67 percent of the total management costs of the state Forest Resources Division in 2013, timber revenues from national forests covered only about 30 percent of the Forest Service's total timber-management costs from 2009 to 2013—which were themselves only a fraction of the agency's total costs of national forest management.⁶²

While none of the national forests in the United States are certified by the leading national bodies, Michigan state forests are certified by both the Forest Stewardship Council (FSC) and the Sustainable Forestry

FIGURE 10:
HURON MANISTEE NATIONAL FOREST TIMBER HARVESTS



Source: Headwaters Economics, "National Forest Timber Sales and Timber Cuts, FY 1980-FY 2015."

Initiative (SFI). The Forest Service could learn some lessons from Michigan in the management art of making active, productive use of public forests while sustainably protecting their long-term environmental quality.

Michigan also has large endowments of oil and gas, part of which is present on state forest lands, where it can be leased. Over a 10-year period up to 2008, total Michigan oil and gas leasing revenues from state lands were around \$750 million. In 2012, oil and gas leasing revenues from state lands equaled \$43.6 million. Again, this is in sharp contrast to the national forests in Michigan.⁶⁴ The total acreage of the national forests in Michigan is about half of the total area of state minerals ownership (including the 2.2 million acres in Michigan where the state owns the mineral rights but not the surface rights). Yet, in 2012, total revenues from federal mineral leasing in Michigan were \$1.4 million, equal to only 3 percent of the Michigan oil and gas leasing revenues from state lands in that year.

Michigan has a greater incentive to make productive use of its state oil and gas resources than the federal government does. State forest and other oil and gas leasing revenues are deposited in the Michigan State Parks Endowment Fund, while about half of federal mineral leasing revenues in Michigan national forests go to the State of Michigan and half to the federal treasury; the Forest Service itself sees none of this money. This example demonstrates yet again the perverse institutional structure present in so much of the federal government's management of its own lands and natural resources.

Michigan is also taking innovative approaches to the management of areas of its state forests that are intended to be preserved for their "natural" features. There are six national wilderness areas on the national forests of Michigan but none on the state forests. This absence of state wilderness areas partly reflects the fact that designating lands as wilderness areas is awkward for the circumstances of forest lands in Michigan. As discussed above, Michigan lands, including what became the national forests, were largely denuded by timber harvesting over the course of the 19th and early 20th centuries.

TABLE 4:
TWO CENTURIES OF CHANGING FORESTLAND IN MICHIGAN

Michigan Forestland	Circa 1800		Circa 2000		Change	
	Acreage	Percent	Acreage	Percent	In Acres	In Percent
Aspen—Birch	292,266	0.8	3,163,200	16.5	2,870,934	982.3
Black Ash Swamp	280,705	0.8	680,700	3.6	399,995	142.5
Cedar Swamp	1,254,055	3.6	1,351,700	7.1	97,645	7.8
Eastern Red Cedar	0	0.0	11,500	0.1	11,500	0.1
Exotic Pine—Spruce—Fir	0	0.0	178,600	0.9	178,600	0.9
Hemlock	4,714,602	13.5	118,800	0.6	-4,595,802	-97.5
Jack Pine	596,836	1.7	715,300	3.7	118,464	19.8
Mixed Conifer Swamp	4,290,553	12.3	701,200	3.7	-3,589,353	-83.7
Mixed Hardwood Swamp	1,421,462	4.1	834,900	4.4	-586,562	-41.3
Mixed Oak Savanna	1,061,564	3.0	1,500	0.0	-1,060,064	-99.9
Mixed Oak—Hickory	2,306,373	6.6	2,612,500	13.7	306,127	13.3
Mixed Pine—Oak	543,562	1.6	352,700	1.8	-190,862	-35.1
N. Hardwoods	7,503,633	21.4	4,971,900	26.0	-2,531,733	-33.7
Oak/Pine Barrens	1,101,424	3.1	11,400	0.1	-1,090,024	-99.0
Red Pine	70,889	0.2	886,000	4.6	815,111	1,149.8
Red/Jack Pine	515,819	1.5	0	0.0	-515,819	-100.0
S. Hardwoods	5,845,677	16.7	1,520,400	8.0	-4,325,277	-74.0
Spruce—Fir—Cedar	823,253	2.4	557,700	2.9	-265,553	-32.3
White Pine	69,141	0.2	278,600	1.5	209,459	302.9
White Pine—Mixed Hardwoods	1,185,681	3.4	164,500	0.9	-1,021,181	-86.1
White—Red Pine	1,132,097	3.2	0	0.0	-1,132,097	-100.0
Totals	35,009,592	100	19,113,100	100	15,896,492	-45.4

Source: Michigan State Forest Management Plan, 2008.

Table 4 shows the changes in the composition of Michigan tree species from about 1800 to about 2000. Aspen were barely present in 1800 but represented 16.5 percent of the Michigan forest acreage in 2000. Hemlock accounted for 13.5 percent of the 1800 forest but are barely present today. Oak-pine barren forests also virtually disappeared from Michigan from 1800 to 2000. These are illustrative of the large changes that occurred on the Michigan forest landscape over this period.

So what is the point of designating a “wilderness” area on a state or national forest in Michigan when the forest has regrown with a new species composition over the course of the 19th and 20th centuries? It would certainly not be “wild nature” in any meaningful sense. Humans have been responsible for creating a brand new forest environment throughout Michigan—on both state and national forests. Michigan offers a good example of more general criticisms of the basic concept of wilderness that have been made by William Cronon and other commentators since the mid-1990s.⁶⁵

Indeed, there are few if any places on earth that remain “untrammelled by human hand” as wilderness is defined in the federal Wilderness Act, and climate change will further reinforce this fact. The idea of a “wilderness” is an artifact of a particular human way of imagining nature, not an objective reality of nature.⁶⁶ The idea of wilderness as a wild area also ignores the substantial past influence of Native Americans on the land prior

to European settlement.⁶⁷ Thus, one might say that state forest management in Michigan is grounded more in the forest realities of the forest on the ground while federal national forest management is grounded more in fantasies of wild forests. In 2008, for example, the Michigan State Forest Management Plan prepared by the Department of Natural Resources stated:

The present forests of the state are a legacy of the natural vegetative succession pathways and postsettlement practices. The landscape is mostly composed of second growth forests that have been heavily influenced by a variety of human-induced disturbances. This started with harvesting of white and red pine and many other species, followed by large-scale catastrophic wildfires fueled by the resulting slash, and then moving to a period of near total exclusion of fire from the landscape. Few of these secondary forests [today] possess the structural characteristics of the circa 1800 forests. With the exception of some rare community types, the state's present population levels, ownership patterns, and social and cultural values preclude the restoration of our remaining forests to circa 1800 conditions. Such restoration would necessitate dramatic [and often socially unacceptable] changes in timber production, wildlife management and many forms of recreation.⁶⁸

The Forest Service, however, is precluded from making such biologically and ecologically blunt assessments by the politically charged environment in which it operates. The federal management categories such as “wilderness” and “roaded” artificially divide the existing federal lands into what are popularly deemed, however fictitiously, to be “natural” and “non-natural” categories. State governments like Michigan's, however, are less driven by such outmoded philosophies of nature and are thus freer to describe forest circumstances as they actually exist—and to manage state forests accordingly.⁶⁹

As noted, Michigan has not established any wilderness areas in its state forests. (There is one large state wilderness area in Porcupine State Park that borders on Lake Superior.) Instead, the state has established a range of special designations for state forest areas in which it departs from multiple-use principles in order to serve what Michigan sees as a greater and more specific cultural and ecological importance of the areas over the long run. In its 2008 Michigan State Forest Management Plan, the state formally explained its evolving “Special Resource Area Management Direction” for its forests.⁷⁰ Instead of a dichotomy of wilderness and non-wilderness, each Special Resource Area falls into one of three broad categories: “Special Conservation Areas,” “High Conservation Value Areas,” and “Ecological Reference Areas.” The “High Conservation Value Areas,” for example, include areas with the following state forest special designations:

1. Natural Areas—as of 2008, including seven such areas totaling 3,446 acres
2. Biodiversity Stewardship Areas
3. Natural Rivers—including 11 such rivers with dedicated zoning districts covering 45,049 acres
4. Critical Dunes—including 15 such designated dunes covering 9,290 acres along the Great Lakes
5. Designated Critical Habitat—including 17 Kirkland Warbler management areas covering 132,644 acres and six Piping Plover management areas covering 8,217 acres
6. Dedicated Management Areas—including 13 such areas specifically oriented to uses such as hunting, trapping, wildlife viewing, hiking, cross country skiing, and snowshoeing
7. Coastal Environmental Areas—including 33 such areas that cover 1,280 acres

The Forest Service and other federal forest management agencies would do well to learn from Michigan's clear recognition that there are a wide range of forest areas of differing cultural, biological, ecological, and other purposes. Forest Service managers could, for example, also identify such well-defined areas and specifically tailor their management structures and policies for the different circumstances of each area—including the flexibility to accommodate multiple compatible uses within a dominant management purpose for a particular area. While the federal government does in some cases designate such dominant purposes as in the cases of wilderness areas and wild and scenic rivers, it has long resisted defining dominant uses for other purposes. The result has been a hodgepodge of use designations in which most forest areas traditionally were to be managed for “multiple use and sustained yield” and since the 1990s now under the vague common rubric of “ecosystem management.”

MINNESOTA

When it comes to the three Great Lake states—Michigan, Minnesota, and Wisconsin—Minnesota has the largest total land area.⁷¹ In addition to bordering the Great Lakes, the landscapes, forest types, settlement patterns, history of economic development, and other features of these three states have much in common. Indeed, they form a distinct subcategory of states within the United States.⁷²

In some respects, the origins of Minnesota's state land system resemble those of New York, Pennsylvania, and Michigan. The common element is a history of intensive timber harvesting that began in the 19th century and ended in the early 20th century. The peak year for timber harvesting in Minnesota was 1899, when 2.3 billion board feet (not much lower than the current total for all U.S. national forests) were harvested. By 1920, however, Minnesota ceased to be a major supplier of wood to the nation. As in other eastern states, after timber had been cut, and if agricultural use was not feasible, much of the land was simply abandoned. Fires frequently burned through slash and other timber-harvest leftovers in Minnesota as in other eastern states, often eliminating any economically viable subsequent use. As a 1969 report on Minnesota forest history explained:

No one was concerned about the burning of the cutover land. Wasn't it to be converted into farms? Burning was an easy way to clear the land, they reasoned. But very little of the land was ever used for farming. Fires had a way of burning off all the good in the land. No one paid much attention to the disappearance of the forests. Not until sawmills began to be dismantled and logging towns began to dwindle, and the uselessness of the cutover lands began to impress itself on a few thoughtful people.⁷³

In Minnesota as well as other eastern timber states, there were large areas of cut-over and abandoned lands that reverted to the state due to their owners' failure to pay taxes, eventually becoming important parts of the state forest system. But Minnesota had a unique feature for a state east of the Mississippi River: Many of its state forests were originally trust lands granted to the state by the federal government—a practice that was common among western states when they were granted statehood. When Minnesota became a state in 1858, the federal government granted it two sections of state trust lands per township—an area equal to 6.3 percent of the land in the township.⁷⁴ Minnesota rapidly disposed of the productive agricultural lands it received in the southern and western parts of the state but retained 33 percent of the trust lands, which were heavily forested, in long-term state ownership. As original colonies, New York and Pennsylvania received no such federal grants of trust land, while Michigan, Wisconsin, Ohio, Illinois, and other eastern states disposed almost entirely of their statehood land grants.

TABLE 5:
DISTRIBUTION OF FEDERALLY GRANTED LANDS TO MINNESOTA

Type of Grant	Original Acres Granted	Acres Retained in 1997	Percent Retained
School Trust	2,900,000	950,264	33
Swampland	4,706,503	1,552,989	33
Internal Improvement	500,000	6,668	1
Total	8,106,503	2,509,921	31

Source: State of Minnesota, Office of the Legislative Auditor, *School Trust Land: A Program Evaluation Report*, Report #98-059 (March 1998).

As shown in Table 5, Minnesota also received grants of federal land that were regarded as swampland—and thus of little value at the time; it retained 33 percent of such swamplands. The federal government gave Minnesota additional federal lands to promote internal development, but the state disposed of almost all these lands. Overall, however, Minnesota retained 31 percent of its total federally granted lands, uncommon for an eastern state. Over time, these lands that had been obtained in multiple ways were consolidated into a single state system that today is administered as “Minnesota’s School Trust Lands.”⁷⁵

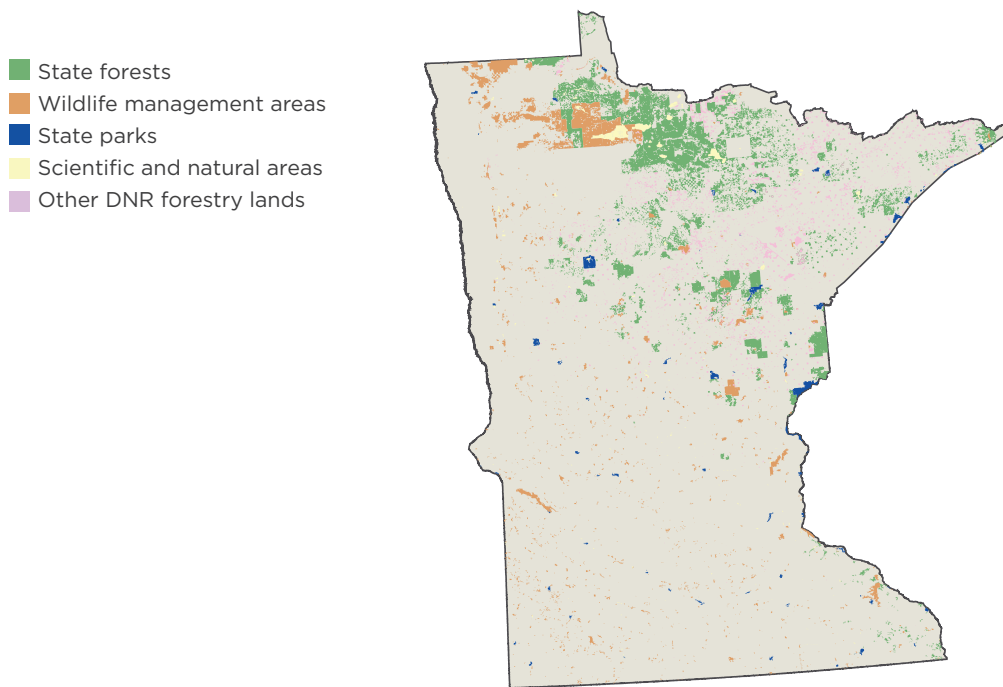
Pursuing another unusual state approach, Minnesota incorporated significant areas of its state trust lands into its state forest system. As shown in Table 6, 1.7 million acres of state forests—more than half of the total Minnesota state forest acreage of 3.2 million—are considered part of the state school trust lands system. As of 1998, there were also 5,745 acres of trust land included in the state park system, where they could not be used for revenue raising purposes. In most states, this would be regarded as incompatible with a state trustee’s mandate that requires trust lands to be used to generate revenue for the school system or other state recipients. Minnesota also manages 706,800 acres of trust land that reflect the more traditional arrangements of other states, and this land is thus outside any other separate state land management system. In total, the school trust lands of Minnesota equal 2.6 million acres, 48 percent of the total state-owned lands. Figure 11 shows a map of these state lands.

TABLE 6:
SCHOOL TRUST ACRES BY MINNESOTA NATURAL RESOURCES MANAGEMENT UNIT

Management Unit	Trust Land Acres	Percent of Trust Land
State Forests And Campgrounds	1,737,123	67
Wildlife Management Areas	85,681	3
Scientific And Natural Areas	51,000	2
State Parks	5,745	0
Riverways	756	0
Water Access	2,880	0
Subtotal	1,883,185	73
Outside Of Management Units	706,800	27
Total	2,589,985	100

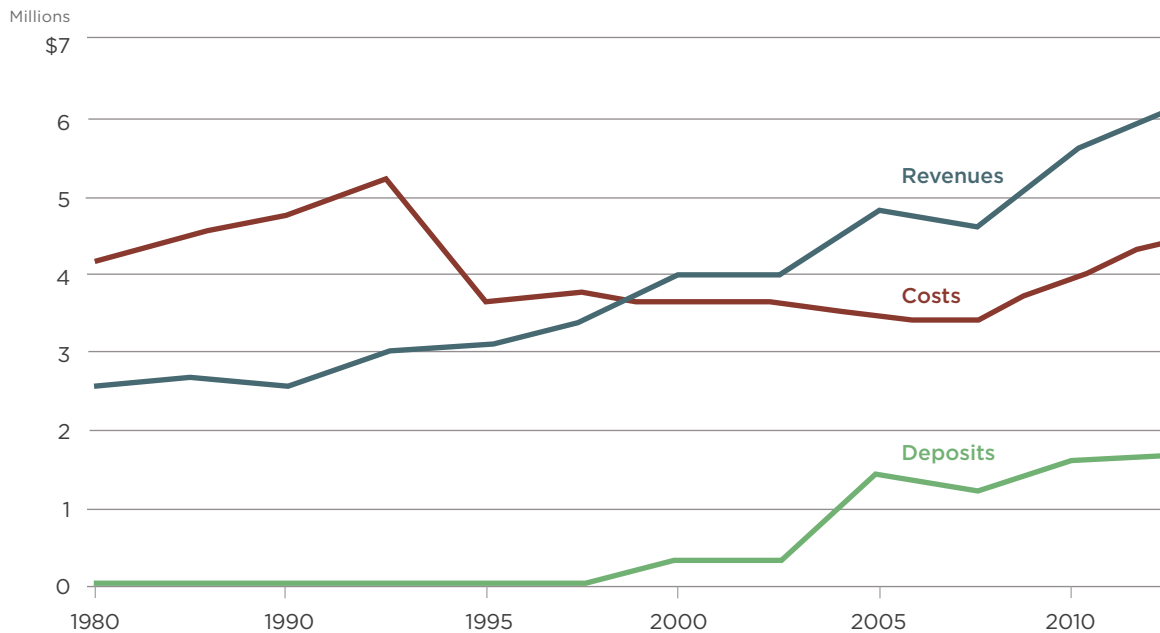
Source: State of Minnesota, Office of the Legislative Auditor, *School Trust Land: A Program Evaluation Report*, Report #98-059 (March 1998).

FIGURE 11:
MINNESOTA STATE LANDS



The inclusion of state trust lands in other state land management systems would seem to leave the state administrators of these systems with dual and, confusingly, conflicting responsibilities, such as raising revenues while also managing for other state economic and environmental purposes. In 1998, a state program evaluation of the management of school trust lands in Minnesota explained that “we found that DNR [the Department of Natural Resources] generally manages school trust land the same way it manages all land under its jurisdiction,” including its non-trust lands. It acknowledged, however, that this could pose a problem “given DNR’s overall natural resource responsibilities, in some instances it may inappropriately result in less income generated for schools” from those state trust lands that have been placed and managed within the state forest system. Minnesota, however, seems to have learned to live with this awkward arrangement. A state evaluation team recommended against any radical measures to separate trust and non-trust lands in Minnesota’s forest management. This likely reflected in part the practical reality that the trust and non-trust lands are so thoroughly intermingled within state forests.

Given that Minnesota’s state trust lands located within state forests are largely managed according to the same principles that are applied to non-trust lands, it is worth considering how its state trust lands have fared in terms of revenues. When lands—both trust and non-trust—were first incorporated into the state forest system, many of them were in poor condition with little revenue potential. In order for them to earn significant net revenues, they first had to be reforested and their health otherwise improved, a process that would not produce profitable timber harvests for several decades. By the 1980s, however, a three-state conference to discuss the future of the Lake States’ forests was beginning to express the concern that, by then, the rapidly improving forest conditions were creating a looming timber supply surplus in these forests for which there might be insufficient market demand.⁷⁶

FIGURE 12:**MINNESOTA PERMANENT SCHOOL FUND: FORESTRY MANAGEMENT REVENUES, COSTS, AND DEPOSITS**

Source: Department of Natural Resources, Division of Forestry, Trust Fund Transfer Certification Reports, 1986-97.

Data: <http://www.auditor.leg.state.mn.us/ped/pedrep/9805-SUM.PDF> page xv

As shown in Figure 12, as late as 1997, Minnesota state trust lands were not yielding any net forestry management revenue for the benefit of the Permanent School Fund (PSF). From then on, however, as the forests continued to mature and harvest levels rose, they produced growing net revenues. The trend continued in subsequent years, reaching a recent level of about \$1.8 million in net revenues. In 2015, including all revenue sources, state trust forest lands earned total revenues of \$12.3 million and had total expenses of \$8.2 million, allowing a transfer of \$4.1 million to public schools.⁷⁷

This was despite the fact that there are some areas of direct conflict between trust and other public responsibilities, such as the 93,260 acres of state forests intermingled within the Boundary Waters Canoe Area Wilderness of the national wilderness system. In these areas, the Minnesota Department of Natural Resources has explicitly “chosen to emphasize its natural resource responsibilities over its fiduciary responsibilities” to the public schools and thus there has been no timber harvesting from state school trust lands located within this federal wilderness.⁷⁸ Minnesota is now negotiating a possible exchange with the Forest Service whereby state trust lands in the Boundary Waters Wilderness would become part of the Superior National Forest—and thus federal wilderness—in return for a transfer of other national forest lands to the Minnesota state forest system.

Since the mid-1990s, overall net revenues have increased for the state trust lands that are included within Minnesota’s state forests and are managed by the Division of Forestry for broader multiple-use purposes. This is in contrast to U.S. national forests where, as shown earlier in Figure 7, over much of the same period, Forest Service timber harvests and net timber revenues collapsed over the same period and have not recovered. The Minnesota example adds further evidence in support of the common criticism that ecosystem management,

TABLE 7:
TYPES OF MINNESOTA STATE LANDS

DNR Management Program	Approx. Acres Managed
State Forests	3,134,900
Wildlife Management Areas	1,191,500
Other Areas Managed For Forestry	720,700
State Parks And Recreation Areas	236,900
Scientific & Natural Areas	183,100
Other Areas Managed For Wildlife	43,700
Aquatic And Fish Management Areas	30,000
Building Sites And Undesignated Lands	23,900
State Trails	11,500
Mineral Lands	3,700
Water Access Sites	3,100
Wild And Scenic Rivers	1,500
Water Management Areas (Dams)	800
Water Trails	700

Source: Minnesota Department of Natural Resources, “Facts and Figures, State Owned Land Managed by the DNR” (August 2014).

at least as practiced by the Forest Service, emphasizes the intrinsic qualities of nature over economically positive results for human beings. But Minnesota has been showing by example that this may not be as large a conflict as is often perceived.

In Minnesota, a system of wildlife management areas was established in 1951 and now accounts for 1.2 million acres (which also include some state school trust lands). Acquisitions of new wildlife areas in Minnesota have been funded principally by a surcharge on small game hunting licenses, although other sources include hunting license fees, bonding funds, Reinvest in Minnesota funds, Critical Habitat License Plate dollars, and Environmental and Natural Resources Trust Fund resources.⁷⁹ In 2002, a Citizens Advisory Committee proposed that Minnesota pursue a 50-year target of acquiring an additional 700,000 acres for its system of wildlife management areas—even as there were few plans to expand state forests. This suggests that Minnesota now preferred what amounts to a “dominant-use wildlife” management philosophy over the traditional conservationist and multiple-use management philosophy of the state forest system. That is, instead of managing its landholdings for a multitude of uses—many of which are often in conflict with one another—the state has opted to prioritize the management of a certain use (wildlife) above other uses for much of its state-owned land. Doing so helps to clarify the management goal for such lands, even while the managers of state wildlife management areas have the flexibility to accommodate other types of uses that are compatible with the dominant wildlife purpose.

In the early 1970s, the Public Land Law Review Commission recommended a dominant-use strategy for management of federal public lands as a whole, but this recommendation was widely criticized and rejected by the Congressional authors of the National Forest Management Act and the Federal Land Policy and Management Act, which were both passed in 1976. These acts required comprehensive planning and multiple use management

for Forest Service and BLM lands, each of which sought a common system of integrated management of all of its lands. Dominant-use management, however, does not mean that land is managed for one use exclusively; instead, state land managers, as in the case of Minnesota, identify and prioritize a clear management purpose but then allow other uses to the extent that they do not pose a significant conflict with the dominant wildlife use. In Minnesota's wildlife management areas, the specific goal is to increase wildlife numbers of both rare species and species that have associated hunting, trapping, and other human uses.

The popularity of state wildlife management areas—not only in Minnesota but also in other eastern states—is effectively an implicit endorsement of this kind of dominant-use management strategy at the state level. While federal wildlife refuges bear some resemblance to state wildlife management areas, wildlife refuges are managed by the U.S. Fish and Wildlife Service, an agency that takes a more restricted view of the compatibility of other uses with wildlife and operates largely independently of other federal land management agencies in the West. In Minnesota, management is more effectively coordinated by the Department of Natural Resources that oversees a full system of state-owned lands.

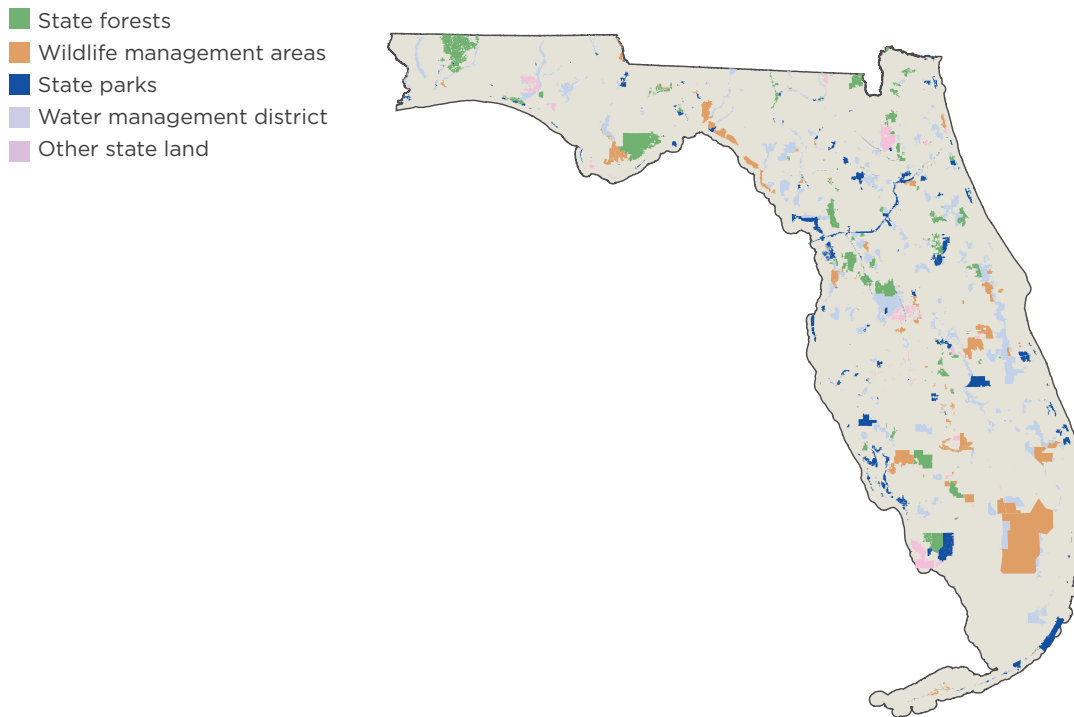
Table 7 shows the system of state-owned lands as managed by Minnesota's Department of Natural Resources (which omits state lands for transportation, buildings, and other intensive uses). State-owned and managed lands in Minnesota equal nearly 5.6 million acres, 11 percent of the total state land area. Among eastern states, Minnesota ranks sixth in percent of state-owned land but first in absolute total area of its state-owned lands.

FLORIDA

Florida is a relative newcomer to the ranks of eastern states that control large amounts of state-owned land. Unlike the five eastern states examined above, Florida's state lands have been almost entirely acquired by direct purchase. Since 1968, Florida has spent about \$7.8 billion on land acquisitions. The funds have been made available under five main acquisition programs approved by the Florida legislature: the Land Acquisition Trust Fund in 1963, the Environmentally Endangered Lands program in 1972, the Conservation and Recreation Land (CARL) program in 1979, the Preservation 2000 program in 1990, and the Florida Forever program in 1999.⁸⁰ Under these last two programs, Florida's legislature authorized the issuance of \$300 million per year of state bonds for the purpose of funding acquisitions. The funds spent under the Florida Forever program since 2000 have been allocated as follows: 35 percent for the purchase of state conservation and recreation lands, 20 percent for lands to be acquired by state Water Management Districts, 21 percent to the Florida Communities Trust for local land acquisitions, and 1.5 percent each for additions to state game management areas, state forests, and state parks as well as a few other small recipients.

As a result, over the past 10 years, Florida has spent as much or more on state and local land acquisition each year as the total federal funding for land acquisition in all 50 states for those years under the federal Land and Water Conservation Fund. The total amount of state conservation lands acquired since 1990 under the Preservation 2000 program and the Florida Forever program is about 2.4 million acres, bringing the total conservation lands acquired in Florida since the 1960s to 3.8 million acres. By way of comparison, this is more than the combined area of state lands in Adirondack Park (2.6 million acres) and Catskills Park (289,000 acres) in New York State. There is no legal requirement such as in New York that the lands must be kept "forever wild," but most of the recently acquired Florida lands are managed for recreational use, ecological restoration, and preservation, not unlike the Adirondack and Catskill parks.

FIGURE 13:
FLORIDA STATE LANDS



Approximately 60 percent of Florida’s state lands acquired since the 1960s could be broadly classified as wetlands. Since the beginning of land acquisitions under the Florida Forever program in 2001, its acquisitions have been as follows:⁸¹

- 712,670 acres of ecological greenways
- 126,260 acres of under-represented natural communities
- 506,319 acres landscape-sized protection areas
- 382,900 acres of natural floodplains
- 725,090 acres important to significant water bodies
- 388,160 acres to minimize damage from flooding
- 9,360 acres of fragile coastline
- 313,170 acres of functional wetlands
- 703,890 acres of significant groundwater recharge areas
- 410 miles of priority recreational trails
- 377,560 acres of sustainable forest land
- 956 archaeological/historic sites
- 11,880 acres in urban service areas

TABLE 8:
FLORIDA OUTDOOR RECREATION RESOURCES AND FACILITIES

Facilities	Federal	State	County	Municipal	Non-Government	Total
Outdoor Recreation Areas	70	715	4,000	5,424	3,105	13,314
Land (acres)	4,600,730	4,697,593	422,331	113,022	410,594	10,244,270
Water (acres)	855,076	2,805,714	50,580	7,278	24,385	3,743,033
Total Acres	5,455,806	7,503,307	472,911	120,300	434,979	13,987,303

In Florida, the Division of State Lands owns conservation lands but does not directly manage them itself. After land is acquired, the division determines how it should be assigned to individual state land management systems. In an unusual state arrangement, the division does not transfer outright ownership to such systems but instead leases the lands to them, contingent on them developing management plans that the division reviews. The division then follows up with periodic reviews to ensure that administrators are implementing the commitments according to their approved land management plans. Figure 13 shows a map of state lands in Florida. The largest area in any unit is the 1.4 million acres held in state game areas, followed by state forests with 1.1 million acres and state parks with 791,000 acres. Other state lands shown on the map include those managed by the five state Water Management Districts.

As shown in Table 8, besides the 4.7 million acres of state-owned lands, there are other non-state-owned public lands in Florida that serve conservation and recreation purposes. There are 4.6 million acres of federal lands in Florida, including Pelican Island National Wildlife Refuge, the first U.S. wildlife refuge, created in 1903, and the 1.5 million-acre Everglades National Park, dedicated in 1947. One of the first national forests in the East was the Ocala National Forest in Florida, created from existing federal lands in 1908. The total area of U.S. national forests in Florida amounts to 1.1 million acres today. Counties and municipalities also own large areas of land (422,331 and 112,000 acres, respectively) used for conservation and recreation, much of it acquired in recent decades with state funds. The grand total of public conservation and recreation lands in Florida is 9.8 million acres, a remarkable 28.6 percent of the total land area of the state. This is about equal to the percentage of federal lands in the United States as a whole.

Florida's system of wildlife management areas is about 5 million acres. The majority of these lands, however, are not owned or managed by the Florida Fish and Wildlife Conservation Commission, the state agency that oversees the wildlife area system. A wildlife management area can include lands under a host of ownerships and management systems including private timberlands, national forests, state forests, and national parks. Such lands have their own management systems but are managed in consultation with the Florida Fish and Wildlife Conservation Commission. The Florida Fish and Wildlife Conservation Commission does, however, also bear the direct management responsibility for 1.4 million acres of state-owned lands that are officially placed within Florida's system of wildlife management areas. These 1.4 million acres, which are both state owned and explicitly designated for wildlife management purposes as the leading use, represent the largest system of state lands in Florida, reflecting the broader shift toward more dominant-use rather than a multiple-use land management philosophy at the state level since World War II.

The Florida state forest system was founded in 1936, later than many other eastern state forest systems. As late as the 1970s, there were only four state forests in Florida. It was not until Florida committed to large-scale land acquisition in the 1970s that its state forests rapidly expanded, resulting in 37 state forests that include 1.1 million acres today. The first few forests, established in the 1930s, were open to timber harvesting and other uses, but in the 1970s, their management shifted increasingly toward outdoor recreation, wildlife management and preservation, and maintenance of ecologically valuable areas. The Division of Forestry, which manages the state forests, is located within the Florida Department of Agriculture and Consumer Services, suggesting a somewhat greater management orientation toward recreational objectives than other state land management systems.

The third major system of state lands in Florida is state parks, which originated from the Civilian Conservation Corps (CCC) in 1933. In order to receive federal funding for CCC camps, Florida was required to have state or other public lands available where trails and other improvements could be built. This spurred the Florida legislature to create a state park system in 1935 as well as the state forest system in 1936. The state parks expanded slowly at first, but their numbers increased rapidly after World War II, reaching 55 parks and 75,889 acres by 1963.⁸² From then on, the state park system rode the wave of rapidly growing state land acquisition programs in Florida. There are now 174 state parks in Florida, including 696,083 land acres (plus 115,129 submerged water acres), which accounts for 63 percent of the land area of Florida's state forests and makes the state park system one of the largest in the United States.

Among the state land systems in Florida, the state parks are distinguished by their dominant mission to support outdoor recreation. At the federal level, the National Park System, in contrast, has often had to make awkward compromises over the years between a goal to advance outdoor recreation and the preservation of park natural systems with minimal human impact. Florida's example suggests that the National Park Service could perhaps be divided among several land management systems and administrative agencies: perhaps one for more intensive outdoor recreation, another for battlefields and other historic sites, and another for preservation of wild areas and other national ecological assets. Parts of the National Park System that are now primarily oriented toward providing wildlife habitat might be transferred to the federal wildlife refuge system.

More than most states, Florida embraces the idea that the users of its state land systems should contribute at least some funds toward the cost of managing these lands. State parks generally charge \$4 to \$6 per vehicle for entrance and \$2 for each pedestrian or bicyclist. Overnight campsites run between \$16 and \$42 per night. State forests charge \$2 per person per day and \$10 for primitive camping areas. In wildlife management areas that are administered by the Florida Fish and Wildlife Conservation Commission, hunters must have a special permit to use such areas (at a cost of \$26.50 per year) as well as a state hunting license (\$17 per year for state residents). There are no permit requirements for fishing other than a state fishing license, and only eight out of 46 commission-run wildlife management areas charge a daily entrance fee for all visitors, usually \$3 per person per day. Overall, Florida's state land agencies are more willing to rely on users to bear part of the management costs than federal land agencies. Visitation on federal lands, for instance, is often free, especially if it does not involve the use of developed sites and facilities.

When it comes to the acquisition of lands in Florida, user fees fall far short of covering the costs of purchasing the lands. For acquisition, Florida allocates the cost burden differently. As the state's policymakers and officials reason, the abundance of conservation and recreation lands across Florida is an important lure for people to move

to the state. Historically, the main source of funding for acquisitions—or for paying interest on state bonds used for acquisitions—has been a surcharge on real estate transactions. As land development has boomed in Florida, real estate developers and purchasers of land and property have been considered leading beneficiaries of the presence of the Florida state lands. Hence, the Florida philosophy has been that they can be expected to contribute significantly to the high level of state land acquisitions. Severance taxes on phosphate production, which have brought in more than \$2 billion since 1971, have also been a source of funding for land acquisitions. The overall state viewpoint has been that “the development that was causing a loss of open space in Florida [should be] ... the source of funds for conserving that open space.”⁸³

Florida also follows an unusually rigorous set of analytical procedures at each stage of the acquisitions and management process. The state invites applications for land acquisitions and then subjects the most promising ones to intensive expert study. Based on this process, Florida establishes a statewide priority list for the use of available acquisition funds. When acquired land is leased to an individual state management agency by the Division of State Lands, it requires a land management plan as part of the allocation process. The Division of Lands closely reviews state lands with more than 1,000 acres at least every five years to ensure that the state administrative agencies are fulfilling their plan commitments.

Finally, the state has a formal process for annually reviewing lands that may not be needed any more and are thus potentially suitable for disposal, culminating in a statewide prioritized list of such lands. At each part of the process, Florida maintains a reputation for professionalism that gives its acquisitions process, management of state lands, and other parts of the state land system an important legitimacy in the eyes of Floridians.⁸⁴ These are all features that the federal government might want to emulate in its own management of the national forests and BLM lands in the West and in its allocation of acquisition funds under the Land and Water Conservation Fund.

In summary, the leading units of state land management in Florida are wildlife management areas (1.4 million acres), state forests (1.1 million acres), and state parks (696,083 acres). Water Management Districts separately manage 1.5 million acres of state land. Including some smaller categories of state lands, total state lands of Florida equal 4.9 million acres, 16 percent of Florida’s land area.⁸⁵

CONCLUSION

In the American governing scheme, the states serve an important role as “laboratories of democracy.” In the eastern United States, state and local governments have had the freedom to devise their own land management systems and practices since the founding of the nation. As this report has shown, compared to the system of federally owned lands that still dominates in the rural West today, eastern state governments have often taken different paths. Given their wider management options, the eastern states examined in this report provide important lessons for federal land management today, such as demonstrating that it is possible to:

- actively manage land for multiple uses and revenue-raising purposes while maintaining forests and other state lands in a healthy environmental and ecological condition;
- earn more revenue from timber harvesting than timber program management costs, thus contributing funds for other state purposes;
- raise enough revenue from timber harvest sales, hunting licenses, minerals leasing, recreation use fees, federal grant programs, and other sources to cover most or all land management costs;

- create new land management methods and administrative systems such as the rapid growth of state-managed wildlife management areas;
- manage state land without hamstringing it with litigation, burdensome rules and regulations, bureaucratic formalities, and other barriers to flexible decision-making that so often afflict the federal land management system;
- avoid management by judicial decision making, which has characterized the federal land management system since the 1970s;
- manage lands as a coordinated system, as opposed to the dispersal of existing federal land management responsibilities among multiple cabinet departments and agencies operating independently to serve their own narrower constituencies.

Eastern states thus have been a source of experimentation and innovation in the development of state land policies, administrative arrangements, management philosophies, and other key matters. On the whole, the experience of eastern state land management can be considered an economic and environmental success story. This success is demonstrated, for example, by the fact that most state forests have been certified by national accreditation organizations as meeting high professional standards of forest management. The fact that the management of the eastern state lands has attracted less scholarly research and other attention is partly a reflection of the fact that they have provoked fewer citizen complaints and less public controversy than their western federal counterparts. The need under federal land management to find common values on a national basis in an increasingly pluralist nation has contributed to the bitter divisions with respect to the purposes of these lands. As instruments of state government, state-owned lands have better-defined constituencies and clearer purposes that promote a stronger sense of land management accountability in response to citizen needs and preferences at the state and local level.

In the West, the federal government owns almost 50 percent of the land, and this federal ownership has tended to crowd out state and local ownership. Some western states own very little state land, and the highest percent of state land in any western state (outside of Alaska) is Arizona with 12.7 percent. Compared with the variations in land policies and management among eastern states, federal managers of land systems such as national forests and BLM lands are constrained to more uniform management approaches.

There is much to be learned from the land management experiences of eastern states. Like the eastern states, we need more room for trial and error on federal lands to improve the management of public lands in the American West. Eastern states have already been showing the way.

ENDNOTES

Table 1, Page 10

- [1] Ownership of 1.3 million acres of Hawaii state trust lands is delegated to other state divisions.
- [2] State Nature Preserves
- [3] 1.5 Million acres are owned by state water management divisions.
- [4] Adirondack and Catskill Park forest preserves
- [5] Includes most state parks
- [6] Lands owned by Division of Water and Supply Protection
- [7] State Forests include 1.7 million acres of state trust lands
- [8] State Trust Lands are public lands not managed within other state land systems.
- [9] Most Washington state forests are state trust lands.
- [10] Oregon Department of Forestry manages 117 thousand forested trust acres.
- [11] State Natural Areas
- [12] Public trust lands that were not original land grants from the federal government.

1. For the purposes of this report, “eastern states” include the states that border on, include parts of, or lie altogether east of the Mississippi River, as shown in Figure 1.
2. State of Utah, Office of the Governor, “An Analysis of a Transfer of Federal Lands to the State of Utah” (November 2014).
3. Robert H. Nelson, *Public Lands and Private Rights: The Failure of Scientific Management* (Lanham, MD: Rowman & Littlefield, 1995); Robert H. Nelson, “Our Languishing Public Lands,” *Policy Review* (February/March 2012).
4. Jon A. Souder and Sally K. Fairfax, *State Trust Lands: History, Management, & Sustainable Use* (Lawrence, KS: University of Kansas Press, 1996), p. 293. See also Sally K. Fairfax, “When An Agency Outlasts Its Time: A Reflection,” *Journal of Forestry* (July/August 2005).
5. Peter W. Culp, Andy Laurenzi, Cynthia C. Tuell, and Alison Berry, *State Trust Lands in the West: Fiduciary Duty in a Changing Landscape, Updated* (Cambridge, MA: Lincoln Institute of Land Policy, 2015).
6. Defining the total area of a state for the purpose of calculating the percentage of state owned land is more complicated than generally recognized. Using official state boundaries, the figures usually shown for the “area of a state” include not only land areas but also significant water areas. In some states, such as most of those in the West, the differences are largely insignificant. But in the East the boundaries of a state can include large areas of water acres that do not correspond to the normal understanding of an area of state “land.” This is particularly true for the states bordering on the Great Lakes which include significant parts of these Lakes within their official state boundaries. Michigan is the extreme case. It is commonly shown as having a state area of 61.9 million acres but 25.7 million of these acres are found in water bodies, almost all of which (24.7 million acres) are in Lake Michigan, Lake Superior, Lake Huron, and Lake Erie. In order to avoid such problems, for the purposes of this paper I define the “area” of each state to be the land acres, exclusive of water acres. In the case of Michigan, this reduces the total area of the State of Michigan from 61.9 million land and water acres to 36.2 million land acres alone.
7. There has only been one previous concerted effort to show the amounts of land owned by individual states for all 50 states. This was issued in 1995 by the National Wilderness Institute. With the passage of more than 20 years, however, many states have acquired significant additional lands, thus creating the need for an update. In some cases, moreover, further investigation has shown that the state acreages estimated in 1995 were inaccurate at the time. The 1995 figures provided by the National Wilderness Institute showed, for example, that 36.7 percent of the total land in New York State was owned by the state, a wildly inflated number compared with the actual 14.0 percent. In treating state land acreage in Wisconsin, the large areas of land owned by local governments were included in the number of acres shown for state-owned lands, thereby giving a state land percentage of 10.5 when the actual percent of state land in Wisconsin is 4.5.
8. Sally K. Fairfax, “Thinking the Unthinkable: States as Public Land Managers,” *West-Northwest Journal of Environmental Law & Policy* (Winter 2008), p. 532.
9. Minnesota, Washington and Oregon manage significant parts of their state trust lands as part of their state forest systems. These lands are included in Table 1 in the figures for state forests. In order to avoid double counting, trust lands that are part of state forests are excluded from the figures for state trust lands.
10. Most states do not make it easy to find the total state lands and the amounts of land in each of the subcategories. This problem is greatest for state wildlife/game management areas. States vary widely in their practices for designating and managing such areas and providing public information. Some states show only the amounts of actual state land under

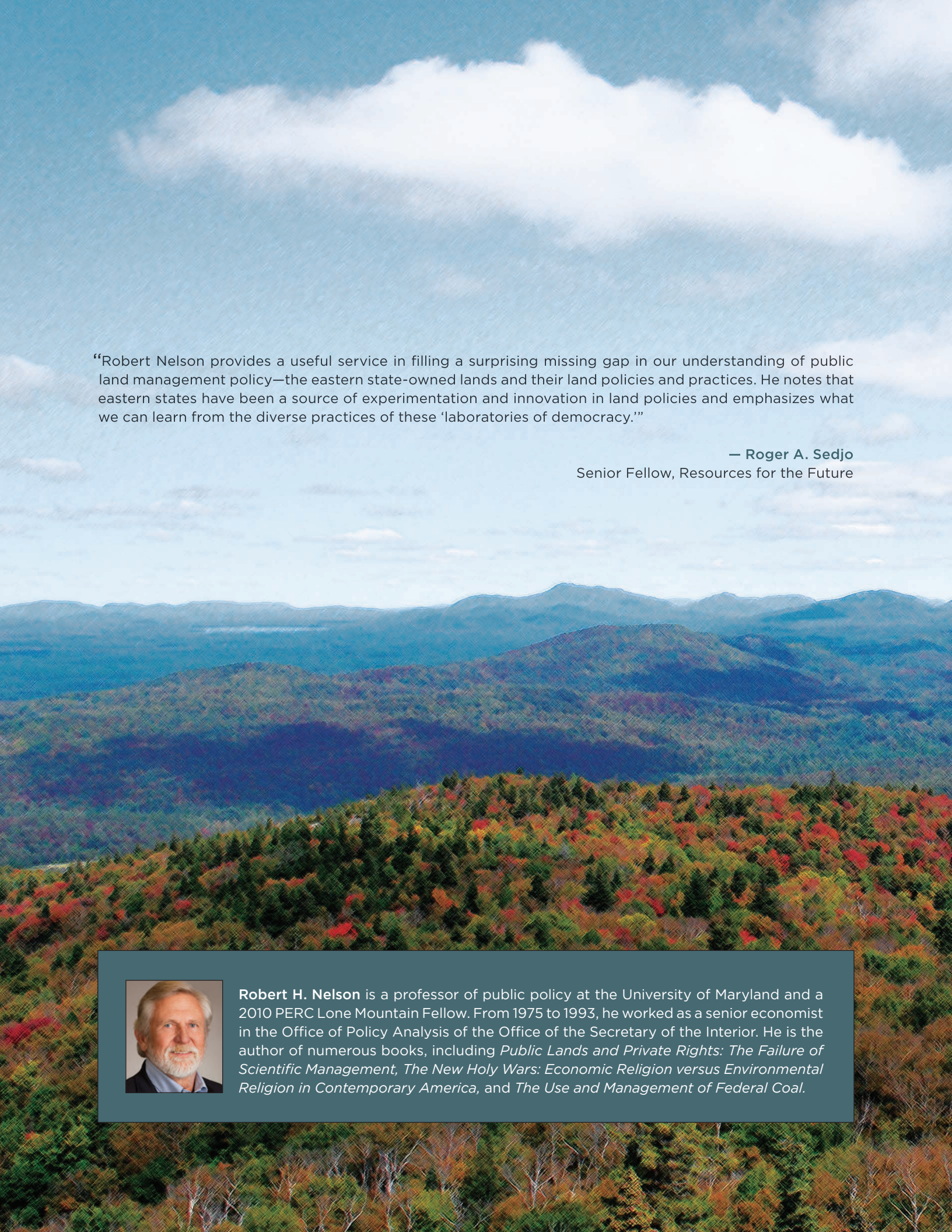
management in state wildlife/game management areas. Other states, however, also have state wildlife/game management areas that include lands in national forests owned by the federal government. Some states also lease land from timber and other private land owners that is included in their state wildlife/game management areas. A further complication is that some states create wildlife/game management areas on lands that are already contained within other state land systems such as the state forests, thus creating the possibility of double counting these lands in overall state totals. Figures given by states for total acreage in state wildlife/game management areas may only show the grand total of all such possibilities when only the first category above—actual state lands in wildlife/game management areas—is relevant for the purposes of calculating total state owned lands. Disentangling all this is a challenge.

11. One Wisconsin county, Bayfield County, owns 464,673 acres—larger than the total state land in many American states—and twenty counties own more than 100,000 acres of public land. Such county lands are similar in size and management issues to state forests in other states. Overall in Wisconsin, the state owns 1.5 million acres (4.3 percent of Wisconsin) but county governments own 2.6 million acres (7.6 percent). Another 1.5 million acres in Wisconsin are owned by the federal government, almost all of it in the Chequamegon-Nicolet National Forest. Total state and county lands in Wisconsin are 11.9 percent of the state land area and all public lands including federal are 16.2 percent.
12. The report excludes Massachusetts, which has much fewer total state acres than the states included in this report and differs in other significant ways.
13. One significant exception is the literature on New York State management of the publicly owned and private lands in Adirondack Park. See Paul Schneider, *The Adirondacks: A History of America's First Wilderness* (New York: Henry Holt, 1997); Philip G. Terrie, *Forever Wild: A Cultural History of Wilderness in the Adirondacks* (Syracuse, NY: Syracuse University Press, 1994); and Philip G. Terrie, *Contested Terrain, second edition: A New History of Nature and People in the Adirondacks* (Syracuse, NY: Syracuse University Press, 1997).
14. Quoted in Schneider, *The Adirondacks*, p. 9.
15. Terrie, *Forever Wild*, Terrie, *Contested Terrain*.
16. Schneider, *The Adirondacks*.
17. Jon Alexander, "Adirondack Park Population Totals Under Scrutiny," *The Post-Star*, April 19, 2011. Available at http://poststar.com/news/local/adirondack-park-population-totals-under-scrutiny/article_7648871e-6acc-11e0-a3a6-001cc4c002e0.html.
18. Protect the Adirondacks, "Myths and Reality 3: The State Does Not Pay Taxes on State Lands and Easements in the Adirondack Park," July 14, 2013. Available at <http://www.protectadks.org/2013/07/myths-reality-3-the-state-does-not-pay-taxes-on-state-lands-and-easements-in-the-adirondack-park/>.
19. State of New York, *Catskill Park State Land Master Plan* (August 2008).
20. New York State, Department of Environmental Conservation Program Policy, ONR-DLF-3, "Clearcutting on State Forests," March 21, 2011.
21. New York State, Department of Environmental Conservation, *Strategic Plan for State Forest Management* (2011), p. 10.
22. New York State, Office of the Comptroller, Audit Report 2006-S-9, "State Land Timber Sales" (2006).
23. Ibid.
24. Interview with Robert Messenger, Bureau Chief, New York Bureau of State Land Management, Spring 2016.
25. Robert H. Nelson, *The New Holy Wars: Economic Religion versus Environmental Religion in Contemporary America* (University Park, PA: Pennsylvania State University Press, 2010).
26. New York State, Strategic Plan for State Forest Management, p. 254.
27. General Accounting Office, *Western National Forests – Catastrophic Wildfire Threaten Resources and Communities* Statement of Barry T. Hill, Associate Director, Energy, Resources and Science Issues, Report No. GAO/T-RCED-98-273, September 28, 1998. With respect to the lack of net revenues from federal timber sales, see Holly Fretwell and Shawn Regan, "Divided Lands: State vs. Federal Management in the West" (Bozeman, MT: PERC, 2015).
28. For a classic study of the similar circumstances of the New England states, see William Cronon, *Changes in the Land: Indians, Colonists and the Ecology of New England* (New York: Hill and Wang, 1983).
29. New York Department of Environmental Conservation, "Young Forest Initiative on Wildlife Conservation Areas," n.d.
30. Kenneth J. Sim, Randy T. Simmons, and Ryan M. Yonk, *Nature Unbound: Bureaucracy vs. the Environment* (Oakland, CA: Independent Institute, 2016); and Daniel B. Botkin, *The Moon in the Nautilus Shell: Discordant Harmonies Reconsidered* (New York: Oxford University Press, 2012).
31. For reference, this state park system is equivalent to about 40 percent of the total acreage of the administratively separate state forests.
32. New York State Council of Parks, Recreation & Historic Preservation, *2014 Annual Report* (January 2015).

33. Robert H. Nelson, Shawn Regan, and Reed Watson, “5 Myths about the Land and Water Conservation Fund” (Bozeman, MT: PERC, April 2016).
34. John McPhee, *The Pine Barrens* (New York: Farrar, Straus and Giroux, 1968).
35. *Ibid.*, p. 4.
36. State of New Jersey, Pinelands Commission, *Summary of Comprehensive Management Plan* (2014).
37. State of New Jersey, Pinelands Commission, Pinelands National Reserve—Ownership. Available at <http://www.nj.gov/pinelands/reserve/owner/>.
38. John J. Costonis, “The Chicago Plan: Incentive Zoning and the Preservation of Urban Landmarks,” *Harvard Law Review* (January 1972).
39. State of New Jersey, Pinelands Commission, *Summary of Comprehensive Management Plan—Pinelands Development Credits* (2016).
40. Samuel P. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920* (Harvard University Press, 1959).
41. History sometimes shows surprising continuities over a century or even longer. Today, for example, historically preservationist New York State has banned hydraulic fracturing (“fracking”) for natural gas statewide (including in economically deprived upstate counties along the Pennsylvania border, where locals strongly support fracking), while historically conservationist Pennsylvania has embraced environmentally friendly and well-managed fracking as for a major boost to its state and local economies.
42. Pennsylvania Bureau of Forestry, *Penn’s Woods: A History of the Pennsylvania Bureau of Forestry* (1995), p. 12.
43. *Ibid.*, p. 83.
44. For an examination of the intellectual confusions surrounding ecosystem management, see Emma Marris, *Rambunctious Garden: Saving Nature in a Post-Wild World* (New York: Bloomsbury, 2011).
45. V. Alaric Sample, Foreword to *National Forest Certification Study, An Evaluation of the Applicability of Forest Stewardship Council (FSC) and Sustainable Forest Initiative (FSI) Standards on Five National Forests: A Case Study* (Pinchot Institute, October 22, 2007),
46. V. Alaric Sample, Will Price, Jacob S. Donnay, and Catherine M. Mater, *National Forest Certification Study, An Evaluation of the Applicability of Forest Stewardship Council (FSC) and Sustainable Forest Initiative (FSI) Standards on Five National Forests: A Case Study* (Pinchot Institute, October 22, 2007), p. 28.
47. *Ibid.*, p. 37.
48. In January 2001, William H. Banzhaf, Executive Vice-President of the Society of American Foresters, wrote to President-Elect George W. Bush to warn him of the urgency of steps to assess a crisis in Forest Service management of the national forests. As he wrote, “never before has this agency been under greater stress and less able to carry out its self-declared mission of ‘caring for the land and serving people.’ The Agency is operating under a complex legal framework, political meddling, interest-group polarization, lack of accountability, loss of expertise, an outdated unclear mission, and a host of other problems” that defeat its best efforts. A critical obstacle is that “the Forest Service and other land-management agencies have pledged to sustain ecosystems without any specific sense of how that might be done.” Letter to President-Elect George W. Bush, January 9, 2001.
49. U.S. Forest Service, *The Process Predicament: How Statutory, Regulatory, and Administrative Factors Affect National Forest Management* (June 2002), p. 5.
50. On the longstanding recognition of the deep failings of Forest Service land management, see Holly Fretwell, “Do We Get What We Pay For?,” PERC, *Public Lands Report II* (1998); Roger A. Sedjo, “Does the Forest Service Have a Future?” *Regulation* (Spring 2000); Sally K. Fairfax, “When An Agency Outlasts Its Time: A Reflection,” *Journal of Forestry* (July/August 2005), Robert H. Nelson, *A Burning Issue: A Case for Abolishing the U.S. Forest Service* (Lanham, MD: Rowman & Littlefield, 2000); Holly Fretwell and Shawn Regan, “Divided Lands: State vs. Federal Management in the West” (Bozeman, MT: PERC, 2015).
51. Commonwealth of Pennsylvania, Pennsylvania Game Commission, *2013 Annual Report*, (2014), p. 3.
52. Michael Jacobson, Bruce Lord, Marc McDill, Andrew Kleit, Terry Engelder, and Audrey Broucek, “Examination of Current and Future Costs and Revenues From Forest Products and Oil, Gas, and Mineral Extraction on Pennsylvania Game Commission Lands (PGC),” submitted by the Pennsylvania State University to the Pennsylvania Legislative Budget and Finance Committee, January 14, 2010, p. 18.
53. Public information on eastern state land management varies from state to state and often is not comprehensive. For the timber harvests of the Pennsylvania game commission, its annual reports do not routinely include timber harvest levels and revenues. As shown in Table 3, some data is available from a special study of the State Game lands commissioned by

the Pennsylvania legislature and conducted by researchers at the School of Forest Resources, the Department of Energy and Environmental Economics and the Department of Geosciences at Pennsylvania State University, as submitted by the Pennsylvania State University to the Pennsylvania Legislative Budget and Finance Committee, January 14, 2010. More recent such data is not readily available from published sources.

54. The state management of the Game Commission lands come closer to the reform proposals long made by Randal O'Toole for the national forests than any existing federal forest management regimes. See Randal O'Toole, *Reforming the Forest Service* (Washington, DC: Island Press, 1988).
55. Fretwell and Regan, "Divided Lands."
56. Tory N. Parrish, "Pennsylvania Game Commission Reaps Revenues from Shale Gas Under Game Lands," *Trib-Live*, November 29, 2015.
57. See Commonwealth of Pennsylvania, Pennsylvania Game Commission, *2013 Annual Report*, (2014), p. 11.
58. State of Michigan, Department of Natural Resources, *Michigan State Forest Management Plan*, David L. Price, editor (2008).
59. P. D. Lovejoy, *Michigan's Millions of Idle Acres* (Detroit: Detroit News Publisher, 1920), p. 3.
60. See Headwaters Economics, "National Forest Timber Sales and Timber Cuts, FY 1980-FY 2015" <http://headwaters.economics.org/dataviz/national-forests-timber-cut-sold/>.
61. State of Michigan, Forest Resources Division, *Fiscal Year 2015 Accomplishments Report*.
62. Fretwell and Regan, "Divided Lands," p. 14. If Forest Service fire fighting expenditures are included, revenues from the national forests cover only a tiny part of the full Forest Service budget for the national forests.
63. Michigan State Forest Management Plan, 2008.
64. The Forest Service is not administratively responsible for energy minerals leasing, which is handled by the U.S. Bureau of Land Management, but it exerts a large influence on the amounts of federal mineral resources offered for lease from the national forests.
65. William Cronon, "Getting Back to the Wrong Nature," *Utne Reader*, May-June 1996, pp. 76-79; see also The Breakthrough Institute, *An Ecomodernist Manifesto* (April 2015).
66. Roderick Nash, *Wilderness and the American Mind* (New Haven, CN: Yale University Press, 1973).
67. Charles C. Mann, *1491: New Revelations of the Americas Before Columbus* (New York: Knopf, 2005).
68. Department of Natural Resources, *Michigan State Forest Management Plan*, p. 29.
69. Daniel B. Botkin, *The Moon in the Nautilus Shell: Discordant Harmonies Reconsidered* (New York: Oxford University Press, 2012).
70. *Michigan State Forest Management Plan*, p. 160.
71. This excludes the large amount of state water areas of the Great Lakes, which would put Michigan first if included.
72. Wisconsin, as noted earlier, has large areas of state and local lands, exceeding 10 percent of the state. The area of county lands, however, significantly exceeds the area of state lands, thus leaving Wisconsin out of the eastern "big six" in terms of the percent of state land ownership.
73. Association of Minnesota Division of Lands and Forestry Employees, *A History of Forestry in Minnesota*, 1969, p. 7.
74. Minnesota was one of the first states to receive two sections of land per township.
75. Minnesota Department of Natural Resources, *Minnesota's School Trust Lands, Biennial Report, Fiscal Years 2012-2013* (December 2013).
76. William E. Shands, ed., *The Lakes States Forests: Report and Proceedings of the Great Lakes Governor's Conference on Forestry*, April 9-10, 1987, Minneapolis, Minnesota.
77. Division of Forestry, M.S. 1 SA.125, Subd 5. *Certification Report, Forest Suspense Account* (2015).
78. State of Minnesota, Office of the Legislative Auditor, *School Trust Land*, p. 43.
79. Minnesota Department of Natural Resources, "More About Wildlife management areas," n.d.
80. James A. Farr and O. Greg Brock, "Florida's Landmark Programs for Conservation and Recreational Land Acquisition," Florida Department of Environmental Protection, n.d., <http://www.dep.state.fl.us/lands/AcqHistory.htm>. Originally published in *Sustain* vol.14 (Spring/Summer 2006).
81. *Florida Forever Five-Year Plan*, 2016. Figures are as of 2015. See http://www.dep.state.fl.us/lands/FFAnnual/2016_Introduction_Abstract.pdf
82. Florida Park Service Alumni Association, *Florida State Park History*, n.d., <http://fpsaa.org/traditions/fps-history>
83. Farr and Brock, "Florida's Landmark Programs for Conservation and Recreational Land Acquisition."
84. Ibid.
85. Florida Natural Areas Inventory, *Summary of Florida Conservation Lands*, February 2016.



“Robert Nelson provides a useful service in filling a surprising missing gap in our understanding of public land management policy—the eastern state-owned lands and their land policies and practices. He notes that eastern states have been a source of experimentation and innovation in land policies and emphasizes what we can learn from the diverse practices of these ‘laboratories of democracy.’”

— Roger A. Sedjo
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