HOOSIERS, TIMBER, AND CONSERVATION: THE TIMBER INDUSTRY'S ROLE IN INDIANA'S CONSERVATION MOVEMENT, 1890 TO 1920

David Benac

Submitted to the faculty of the University Graduate School in partial fulfillment of the requirements for the degree Master of Arts in the Department of History, Indiana University August 1997
Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the requirements for the degree of Master of Arts.

Dr. Philip V. Scarpino
Chairman

Dr. Robert G. Barrows

Dr. Berthold P. Riesterer

May 8, 1997
Dedicated to Alfred and Leona Balog

Acknowledgments

In preparing this thesis I have drawn on several individuals for significant assistance. Dr. Philip V. Scarpino has admirably directed my understanding of the intersections of public history and environmental history. His comments on numerous drafts of varying degrees of completeness generously offered have helped me create a respectable historical study. Dr. Robert G. Barrows and Dr. Berthold P. Riesterer also read and made very useful suggestions on the completed manuscript. Without the understanding and support of my family the following work would not have been possible.
Contents

Acknowledgements iii
Map One 1
Introduction 2
Chapter One 18
Chapter Two 41
Chapter Three 53
Conclusions 89
Selected Bibliography 102
Introduction

"Conservation in Indiana as I take it means, in simple words the saving of the State's Natural Resources for future generations. . . . It does not mean that we should put to actual use less."1

"Mr. Fairbanks believes . . . [reforestation] will add millions of dollars annually to its [Indiana's] wealth and . . . increase its beauty."2

This project is an analysis of how and why the exploitation of timber resources in Indiana during the 1890s reached an unprecedented level and led to a wise-use conservation movement among Indianans.3 Research for the study drew on collections of correspondence and primary documents supported by secondary works in environmental history and related historical and scientific fields. When possible, I have utilized works that address human interactions with the environment in Indiana and the Central

1Willis S. Blatchley, "Conservation in Indiana," speech delivered to the Indiana Confederated Commercial Clubs in Anderson, Indiana, Box 1 (1883-1916), Folder 3 (1888-1916), Blatchley mss., Lilly Library, Indiana University, Bloomington. (Hereafter cited as Lilly.)
3The term "wise use," applied throughout this work to the management of natural resources (i.e., forests) for a continuous and maximum level of harvest, is roughly synonymous with the term "practical forestry," contemporary to the Progressive era. The more modern phrase is derived from the Progressive ideal of rational and thoughtful utilization of resources for long-term gains. Samuel P. Hays popularized the term among environmental historians in 1959 with; Samuel P. Hays, Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920 (Cambridge, MA: Cambridge University Press, 1959).
Hardwood Forest Region. Because of a general lack of historical research on lumbering and conservation in Indiana, works concerning other areas provided supplementary evidence. Since the 1960s, scholarship in environmental history has grown dramatically but has overlooked Indiana. This work focuses on the period from 1890 to 1920 and explores the relationship between forest removal and conservation within the state. Previous discussions of timber use, often considered economic history, failed to unite the overutilization of forest resources with efforts to stem the loss.

Conservation in Indiana and around the nation emerged in the context of the Progressive reform movement. Progressives acted most vigorously in the United States from approximately 1890 to 1920. By developing the rationale for the reform efforts of these individuals the researcher discovers how conservation fit into their agenda. Progressives were concerned with a wide variety of issues with some key themes: replacing the power of politicians with action by the general public; shifting control of businesses by a monied oligarchy to smaller producers; ending wasteful, exploitative use of natural resources in favor of efficient, well-planned, sustained development; substituting trained professionals and scientists for informally trained operatives; and immorality with the values of the white middle class. Even this list of goals does not cover the often

---


contradictory spectrum of reforms pursued by the Progressives, but it does illustrate common desires.\(^6\)

Forestry as an element of conservation throughout the nation emerged from the Progressive ideals of efficiency and scientific management. Foresters depended on governmental agencies for funding but worked to educate the public in order to create a broader group of people concerned with the management of forests.\(^7\) By rationalizing harvest and production, foresters also intended to reduce the waste common among harvesters and manufacturers in the timber industry. This was not an attempt to retain the beauty of forests but to get the greatest long-term production from any given forest.

Influenced by professional forestry in Europe and the Progressive movement in the United States, graduate and undergraduate forestry programs began to expand in the first decade of the twentieth century. As scientific foresters became more common, professional organizations such as the Society of American Foresters (1901) demonstrated the benefits of rational forest management to the public. Earlier organizations concerned with forests, such as the American Forestry Association (1875), were more committed to the protection of trees for aesthetic appreciation.\(^8\)

National conservation during the Progressive era was much more diverse than the protection of forests for future use suggests. Among the most notable efforts of conservationists at the time were drives to maintain sources of pure water, limit air

---


\(^7\) For discussion of the public appeals made by foresters, see: Hays, *Conservation and the Gospel of Efficiency*, especially 122.

pollution, save threatened game animals, and preserve soil fertility. Eliminating or reducing pollution in bodies of water and the atmosphere drew on the Progressive concern for public welfare.\textsuperscript{9} Wildlife protection received its greatest support from hunters and other directly concerned people, but as with pollution control and the entire conservation movement, a wide variety of individuals and groups provided the necessary impetus.\textsuperscript{10} The preservation of soil fertility depended on conservationists convincing farmers and other landowners and users to accept scientific land-management. Beyond the obvious concerns of crop rotation and use of fertilizers, soil scientists urged landowners to maintain forests as erosion control and to seek scientists' recommendations on the best use of each tract of land.\textsuperscript{11} Despite the great variety of conservationist activities in the Progressive era, this study remains devoted to the growth of a movement to manage forests in Indiana as a response to deforestation caused by agricultural and commercial harvest.

Significant forest clearing for agriculture beginning in the 1830s gave way to intense commercial harvest and use of timber resources in Indiana in the 1880s and 1890s, which spurred the emergence and development of a notable conservation movement by the early-twentieth century. As members of the industry and concerned individuals acknowledged the rapid decline in the quality and quantity of forests in the state, the move to conserve remaining stands gained strength. Between 1890 and 1920, nascent philosophies designed to avert the threatened timber famine formed in the minds of

\textsuperscript{9}The essays in Joel A. Tarr, ed., \textit{The Search for the Ultimate Sink: Urban Pollution in Historical Perspective} (Akron, OH: The University of Akron Press, 1996), provide a valuable discussion of attitudes toward pollution.


\textsuperscript{11}Vernon Carstensen, \textit{Farms or Forests: Evolution of a State Land Policy for Northern Wisconsin, 1850-1932} (1958). Carstensen discusses the methods of regulation proposed to maintain the viability of agriculture in one state, but his findings are applicable on a broader scale.
forward-looking individuals and replaced frontier ideologies of conquest. Many Indianans no longer considered forests an inexhaustible hindrance to civilization. The individuals who began to manage forests for sustained yield, contributed significantly to the establishment of a conservation movement in Indiana as a means of protecting their livelihood—the state's forest resources.

This new valuation and reduced exploitation of forests did not appeal to everyone in the state. Many mill owners continued to use timber at unsustainable levels until deforestation forced their relocation to other regions with yet untapped forests, particularly the South and West. Agriculturists often resisted the efforts of well-meaning individuals who attempted to demonstrate the importance of forests. Foresters and conservationists promoted the benefits farm woodlots provided in terms of economic profits and protection of related natural resources, but the pressures to achieve maximum production forced many farmers to clear and plant every available acre. There were also people who refused to abandon inherited attitudes of forests and nature as subservient providers of commodities. Despite these challenges, the obvious denudation of the state's woodlands convinced most people to support the conservation of forests.

Indiana initiated many conservation measures early enough to claim a position as a leader in the national movement but rarely received such recognition. States in the Northeast (because of their earlier establishment of dense populations) suffered a significant loss of forests well in advance of Indiana, but only New York, Pennsylvania, and Maine developed strong conservation movements noticeably before the Hoosier state. Three Great Lakes States—Michigan, Wisconsin, and Minnesota—underwent the most rapid timber depletion ever to occur in the nation, yet entered the conservation movement after Indiana had begun to pursue the issue actively.\(^{12}\) Timber production in Indiana

---

\(^{12}\)Between 1850 and the late-1890s the forests in the Great Lakes region were essentially logged off. See Susan Flader, ed., *The Great Lakes Forest: An Environmental and Social History* (Minneapolis: University of Minnesota Press, 1983). For good overviews of
peaked in the late 1880s and early 1890s, concurrently with the era of greatest harvest in the Great Lakes pineries. Indiana responded to its myopic timber industry of the early-nineteenth century with an effective conservation movement (often led by timbermen in the early-twentieth century), but generally refrained from assuming a high-profile role in national debates concerning timber use and conservation.

A discussion of some general developments of American interaction with nature in the nineteenth century will clarify the rise of conservation in Indiana in the three decades before 1920. The first Euro-American settlers perceived the environment of the area that would become Indiana in 1816 as virgin and wholly natural. This was not, however, exactly true. Native Americans had inhabited the land for centuries with minimal, yet real, impacts on their surroundings. In the era before Americans began to migrate to the territory, forests of the region had a different appearance than those of the state today.

Native Americans altered the landscape very little compared to later settlers. The natives practiced limited agriculture and used fire to improve hunting, clear fields, and facilitate travel. As users of timber, Native Americans created few notable changes in forest distribution and composition. Forest litter and dead wood supplied the majority of their fuel and construction needs, creating little incentive to remove standing timber. Dugout canoes constituted the primary use of live trees for Native Americans. Outside the effects of their fires, natives altered the pre-Euro-American environment of Indiana very little.13


13Evidence concerning the burning of forests by Indians within the area of present day Indiana is relatively scarce. However, in 1679, Father Louis Hennepin determined fires set by Miami Indians during their hunts were responsible for the composition of forests in northeast Indiana. See: Shirley S. McCord, Travel Accounts of Indiana, 1679-1961: A Collection of Wayfaring Foreigners, Itinerants, and Peripatetic Hoosiers, vol. 67, Indiana Historical Collections (Indianapolis: Indiana Historical Bureau, 1970), 4, an excerpt from John Gilmay Shea, A Description of Louisiana, by Father Louis Hennepin (New York, 1880). For a general discussion of how Native Americans altered their surroundings with
Pre-settlement forests encountered by migrants differed from those of modern Indiana primarily in terms of the extent of unbroken wooded areas, the age distribution among trees, and the species represented. In 1620, only a small area of prairie, part of the region known as the prairie peninsula, extended from the northwestern border to the northeast edge of what would become Indiana, breaking the near continuous old-growth forest. Old-growth forests consist of trees in excess of one hundred years old with new growth of various ages in areas opened by windfall, disease, or fire. In the 1870s, the Indiana State Geologist determined pre-settlement forests in the area that would become Indiana had been composed primarily of four species of oak, two species of hickory, beech, and sugar maple. He also identified red maple, buckeye, butternut, elm, gum, wild cherry, two species of ash, and several other species as common. This list of trees reflects the geologist's mercantile view. He identified the species utilized and removed in fire, see: William Cronon, Changes in the Land: Indians, Colonists, and the Ecology of New England (New York: Hill and Wang, 1983), 13. This study of New England and Stephen J. Pyne, Fire in America: A Cultural History of Wildland and Rural Fire (Princeton, NJ: Princeton University Press, 1982), analyze the role of fire in Indian forest use practices. The forest near Vincennes as described by Charles Larrabee in 1811 provides an interesting perspective. He notes the lack of undergrowth and the open character of the woods, possibly a result of repeated burnings since the area was not grazed, the other primary cause for such features. McCord, Travel Accounts of Indiana, 59, an excerpt from Mrs. Florence G. Watts, ed., "Lieutenant Charles Larrabee's Account of the Battle of Tippecanoe, 1811," Indiana Magazine of History, 57 (1961): 225-247. Michael Williams, Americans and Their Forests: A Historical Geography (Cambridge: Cambridge University Press, 1989), 436, Williams draws his data from Horace Greeley, "The Relation of Geography to Timber Supply," 4-5. For this study old growth and virgin timber will be used interchangeably. In the era considered, the term "virgin timber" was used rather than the more modern "old growth." Both refer to a forest undisturbed for long enough to create a distinct environment; most definitions require approximately 200 years for this phenomenon. For a detailed discussion of old-growth forests see Chris Maser, Sustainable Forestry: Philosophy, Science, and Economics (Del Ray Beach, FL: St. Lucie Press, 1994).

agricultural and timbering activities because of their high value. As cutting and marketing of timber became more profitable in the last third of the nineteenth century, these more valuable species declined in proportion to the rest of the forest. Removal of the largest and most valuable trees left the forest reduced in density and composed primarily of smaller and less economically valuable species.  


17 For an overview of settlement along riverways in Indiana see James H. Madison, The Indiana Way: A State History (Bloomington: Indiana University Press, 1986), 77. For a more detailed study of Pike Township in Marion County, Indiana, see Rita W. Harlan, "Eagle Creek History Project Report" (Indianapolis: May 16, 1994), map in unpaginated section. This unpublished work was obtained from the files of Dr. Philip V. Scarpino, History Department, Indiana University-Purdue University, Indianapolis. The study visually and textually illustrates the settlement of Pike Township along Eagle Creek as much as fifty years before areas removed from rivers.

quickly on these dirt roads and posed a serious danger to horses, as the animals frequently fell through the planking and broke legs. Other roads became impassable corridors of mud during wet seasons and choked travelers in dust during the dry portions of the year.19 To transport goods to market, farmers and merchants had to locate near rivers. Early industries, such as gristmills and sawmills, also depended on rivers for transportation and to turn waterwheels.

By the 1860s canals and railroads began to reduce the importance of river systems, and it was steam-powered railroads that spawned great changes in timber use. By the 1880s, railroads effectively covered the majority of the state with inter-connected lines.20 Relatively small and dependable steam engines provided power for sawmills and other industries, which allowed them to locate away from rivers during this same period. As steam power opened the interior of the state to settlement, timber operations moved away from rivers, employed fewer workers, and produced greater quantities of lumber.21

19 For accounts of poor road conditions see Madison, The Indiana Way, 81-82; and McCord, Travel Accounts of Indiana, 140, an excerpt from S. A. O'Farrell, A Ramble of Six Thousand Miles Through the United States of America (London: 1832).


21 For information on the increased productivity of milling operations see the decennial censuses of manufacturing. These censuses document the number of employees and board feet produced by all reporting sawmills.
During early settlement in Indiana, the dominant philosophy of land use identified agricultural crop production as the soil's highest purpose. Settlers also believed that only those portions of the farm providing a direct benefit to its owner deserved to remain, an argument that threatened the future of woodlots on farms. Until well into the nineteenth century, settlers viewed nature as an unlimited storehouse of commodities, while they considered wilderness an enemy of civilization. Because of their fear of truly untamed nature and their desire to civilize the land in the name of progress, settlers removed forests throughout the nation, including Indiana. William Cronon, an eminent environmental historian, argues that settlers cleared their lands to advance agricultural possibilities and to remove the threat of wilderness posed by unbroken forests. Woodlands held no unique economic importance in the settlers' world-view, as the resources of the forest appeared inexhaustible and obtainable anywhere. Because of their perceptions of timberlands as unlimited and farm products as the most suitable use of soil, settlers cleared as much land as possible.

Indiana's first settlers effectively cleared forests by girdling, felling, and burning the trees. Settlers removed average to small trees by felling them with an axe and larger trees by girdling. After chopping down small trees, farmers reduced the logs to manageable

---

23 Cronon, Changes in the Land, 116-118.
lengths with an axe and rolled the remaining pieces into piles to be burned. The farmer was then left with a relatively clear field, capable of high yields, although only for a short time. Once crops no longer offset the labor necessary to produce them, farmers cleared new fields and started over. By 1880, farmers owned 20,420,983 acres of land throughout the state and had cleared 68 percent of this acreage. As settlement diffused and improved transportation made market farming profitable, the rate of agricultural clearing increased for the next two decades.  

For the last half of the nineteenth century technological innovation significantly altered the character of timber use in Indiana. Improvements in milling and harvesting techniques and machinery gave industrialists the ability to increase output many times over. Steam power and the expansion of the railroad network contributed the greatest incentives to this era of growth in the timber industry. Steam engines increased the amount and mobility of available power. Railroads posed a dual impetus for forest use. They allowed access to large and distant urban markets as well as remote stands of timber. The construction of rail lines also called for vast quantities of wooden ties and materials for bridge building. Bandsaws, although used primarily by large milling operations which were rare in Indiana at the time, decreased the amount of wood lost as sawdust

---


27 Ibid., for a comparison of land under farm ownership and the percentage of that land improved, 1880-1900.


with their reduced kerf and required less energy than circular saws, allowing producers to increase their efficiency.\textsuperscript{30} These technological changes introduced Indiana to the national timber market and forced the state to continue to produce at a high level in order to maintain a competitive position.

Timber harvest and lumber production remained small-scale industries in Indiana throughout the period, but furniture, veneer, and agricultural implement manufacturing operated on a larger scale and augmented forest use in the state.\textsuperscript{31} These other industries provide limited but useful definition for specific arguments concerning the growth of a forest-conservation movement. Their technological adaptations to forest loss provide an illustration of the industry's response to deforestation. By the second decade of the twentieth century, veneer millers introduced a significant innovation to allow the use of previously overlooked stumps to produce high quality veneer.\textsuperscript{32}

A growing population and level of urbanization in the years preceding 1890 raised the demands for forest products and placed ever greater pressure on available timber. The massive urbanization of the era allowed fewer people to supply their own needs. As a consequence, urbanites drew more heavily on resources as they consumed more manufactured goods. Indiana's population rose dramatically in its early years. For approximately the first 30 years of statehood the population increased by over 100 percent each decade. By the mid-1850s, the state, which began with under 150,000 people, expanded to over 1 million. The population continued to grow, exceeding 2 million by 1890. This massive influx of people placed increasing demands on the state's resources

\textsuperscript{30} R. C. Loehr, "Saving the Kerf" (notes, 1949), 2-3, in Box 1, Folder 7, Hoffman Brothers mss. Lilly. Kerf is a term used to denote the width of a cut, or the amount of sawdust produced with each pass of the saw.

\textsuperscript{31} Daniel Lee Clark, "The Indiana Hardwood Industry: A Study in Small Business Enterprise" (Ph.D. diss., Purdue University, West Lafayette, IN, 1986). For a discussion of the predominance of small-scale production, see 99-100; on the furniture industry, see 62; and for agricultural implements, see 117.

\textsuperscript{32} Ibid. 380-382.
and drastically raised the level of waste created throughout the state. Not only did absolute numbers increase, but the percentage of urban dwellers also rose dramatically. Indiana registered no urban population until 1840 and then only roughly 10,500. The urban population, however, exceeded 590,000 by 1890.\(^3\) In addition to this demand, national urbanization and industrialization provided a market for a greater amount of Indiana's timber and timber products.\(^4\) Daniel Lee Clark, a historian who has written on Indiana's forest industry, argues that hardwood lumber production operations in Indiana remained in small towns and rural areas but began to supply urban and mass markets by the mid-nineteenth century. He demonstrates that the introduction of large-scale demand resulted in a new structure in the hardwood milling industry.\(^5\)

Unused, discarded, and underutilized materials multiplied in removal and milling processes as the industry increased production without seeking more efficient methods. Believing forests to be inexhaustible, industrialists wasted vast amounts of timber by leaving high stumps, long tops, and damaged trees, as well as through inefficient log use in mills.\(^6\) Manufacturers also reduced much of their raw material into unusable waste. One

\(^3\)For the figures on population see Madison, *The Indiana Way*, 325-327. Madison draws on the United States Censuses from 1830 (which provides information dating back to 1810) to 1980 in a useful appendix.

\(^4\)The Tri-State Forestry Conference of 1919 (Indiana, Ohio, and Illinois) addressed the historical exploitation of forests in the region. For an analysis of Indiana's involvement in the national timber market over the previous two decades by a state delegate see Richard Lieber, "Report of the Tri-State Forestry Conference" (October 23, 1919), in Box 2043, Department of Conservation Records, Indiana State Archives, Indianapolis. (Hereafter cited as Archives.)

\(^5\)Clark, *Entrepreneurs in Hardwood*, 59-60, demonstrates some of the changes in the hardwood lumber industry, while 61-62 introduces the influence of the expanding national market on Indiana hardwood lumber producers.

estimate determined that nineteenth-century millers utilized under 50 percent of each log they received. The ever-widening market for forest products forced manufacturers to seek quick profits to remain competitive, abandoning time and energy intensive efforts to obtain greater production from individual logs or trees.

In the late-nineteenth and early-twentieth centuries, a conservation movement began to develop and increasingly gain support as a means of responding to the decimation of Indiana's forests. Both at the state level and nationally, conservationists were primarily upper and middle class urbanites. Wise-use conservationists were able to dictate forest use in Indiana until the late 1910s, but advocates of complete preservation of the state's forests also made their presence known. Although these two groups represented opposing beliefs, management for harvest and protection for aesthetic and spiritual reasons, proponents of both arguments could and did on occasion drift between philosophies. The turn-of-the-century activities of Clarence H. Smith, a well-traveled member of the Indiana Audubon Society, represented the ideals of preservation-orientated conservationists. His own world-wide travels, those of his extended family, and the forestry education of his nephew at Yale, which he subsidized, all demonstrate his comfortable position in Indiana society and his concern with nature. One of Smith's

---


38 Examples of individuals devoted to saving forests for aesthetic reasons can be found in William Watson Woollen, *Birds of Buzzard's Roost: One for Each Week and Other Essays* (Indianapolis: Scott-Miller Company: Publishers, 1907), 4-8. Woollen, a prominent Indianapolis attorney, purchased a 44-acre tract of land along Fall Creek, just outside the city, to preserve as a wilderness for the benefit of avian life. The following basic definitions concern the different types of conservation. Conservationists believed in wise-use management, or the development of timberlands in order to maintain long-term maximum harvests. Preservationists attempted to protect woodlands from extractive uses for aesthetic and spiritual reasons. Both positions agreed that exploitation of forests must be curbed, but their strategies differed.

39 Clarence H. Smith (1875-1959) Papers (1680-1955), Indiana Historical Society, Indianapolis. Box 11, Folder (1894-1912), contains several letters detailing the travels of
fellow Indiana Audubon Society members wrote, "[t]he contemplation of a fine elm or oak gives me a thrill that nothing else in Nature will produce unless it be majestic mountains." This non-utilitarian appreciation of nature provides an excellent example of the position of conservationists removed from the timber industry or related endeavors; however, as demonstrated by newspaper and government publications, most concerned Indianans upheld the position of wise use espoused by industry and science.

In the study of the Indiana timber industry and the state's early conservation efforts, the researcher must consider the field of forest history. The evolution from agriculture to timber production to conservation in Indiana followed national trends. This study, however, concentrates on the role of the timber industry in the development of a widespread conservation movement in Indiana, the heart of the Central Hardwood Region. Such research reveals the importance of the timber industry in directing the development of policies and attitudes in the state. Many groups cooperated to form a movement with the shared goal of protecting forests, although they differed in strategy. The roles of select individuals and influential interest groups begs for treatment in future studies. The

his grandmother, sister, and other relatives, as well as letters from his nephew at Yale. Many of the letters express gratitude for gifts of money. (Hereafter cited as Smith papers, IHS.)

40 J. E. Cook to Clarence H. Smith, May 1906, in Box 30, Folder 1, Smith papers, IHS.
41 The development of the wise-use conservation movement was greatly facilitated by the resolution of earlier debates concerning the scientific role of forests. By drawing on scientific findings conservationists appealed to Progressive desires for rationale utilization of resources at the turn of the century. For some examples of the debates and the use of science in conservation, see: David A. Clary, Timber and the Forest Service (Lawrence: University of Kansas Press, 1986); Hays, Conservation and the Gospel of Efficiency; Pinchot, Breaking New Ground; and H. L. Barr, "The Effects of Deforestation on the Water Level of Montgomery County, Proceedings of the Indiana Academy of Science, 20 (1911), 91. The proliferation of conservation groups based on scientific study of forests in Indiana illustrates the doctrine's importance in the state. Some examples are, a short lived Indiana Aboricultural Association (1895), the Indiana Audubon Society (1898), the Indiana Hardwood Lumbermen's Association (1899), the Indiana State Board of Forestry (1901), the Nature Study Club of Indiana (1908), and the Indiana Forestry Association (1909).
industrial aspects considered below have received more scholarly attention than the question of conservation. Earlier works on the forest-products industry primarily discusses technology and economics, leaving excellent opportunities for more comprehensive study of the interaction of technology, economics, labor, and natural resources in the timber industry.

To consider the development of wise-use conservation in the state, the researcher must first determine what inspired the movement. Many factors led to the drive to conserve and efficiently utilize Indiana's forests, but the intense over harvest and waste characteristic of the area until the middle of the nineteenth century provided the single greatest impetus. An evaluation of why forests were removed, by whom, and from what areas of the state over time helps to explain the actions of conservationists in the late-nineteenth and early-twentieth centuries.
Chapter One:

Expansion of Indiana's Timber Industry

"No state has produced a better quality and quantity of hardwoods than Indiana." (1907)¹

"Indiana's hardwoods were the most accessible, while Michigan and Wisconsin offered supposedly inexhaustible supplies of white pine."²

Throughout most of the nineteenth century timber use in Indiana increased gradually. Then during the last thirty years of the century, demand for forest products rose dramatically. Population growth, with its needs for raw materials for construction and manufacturing, accounted for the majority of the increase. Excluding agricultural clearing, timber harvest in the first two-thirds of the century remained negligible. By the end of the century, the industrial manufacture of wooden items became less expensive and time consuming, while raw materials and markets became more accessible. Technological advances released harvesters and manufacturers from the restrictions of transportation and power sources. The nascent science of forestry promised the development of forest management as a method to transform natural woodlands into productive and controllable

¹Indiana State Board of Forestry, Bulletin Number Seven (Indianapolis: Wm. B. Burford, 1907), 13.
²Samuel J. Record, "Forestry for the Farmer, the Problem in Indiana," Indianapolis News, September 28, 1907, p. 16. Record, an occasional contributor to Indianapolis newspapers, was a forester from Crawfordsville, Indiana, with a graduate degree in forestry from Yale. He worked with the United States Forest Service then went on to a career as a professor of forestry and eventually the Dean of the School of Forestry at Yale.
resources. Cutting-edge technologies allowed timbermen to profitably harvest and mill timber that had previously been beyond their reach.

Until the 1880s, most timber harvested was cut by farmers and went to local and agricultural uses, such as fuel, farm implements, homes, fences, barns, sheds, and other structures. As industry came to dominate wood use in the following decades, farmers continued to supply a vital portion of the raw material. Agriculturists provided timber in the form of cut logs and stumpage (standing timber, which was sold for harvest). In both cases, especially the latter, farmers contributed seasonally. Agriculturists sold stumpage during planting and harvesting seasons but only cut and shipped logs in the winter.

Nineteenth-century farmers were generally cash-poor and timber sales provided them with an important source of income. Their extensive land ownership allowed them to supply large amounts of stumpage to the timber industry. In 1880, farmers owned 20,420,983 acres in Indiana with 31.8 percent of that land unimproved, a slight drop in absolute acreage to 20,362516 in 1890 was matched with a decrease in unimproved land to 25.8 percent. In 1900, an increase in total acreage to 21,619,623 acres and a further reduction of unimproved land to 23 percent maintained the trend. By 1910, farm acreage was once again declining, to 21,299,800 acres, while unimproved land continued to fall, to 16 percent. During the late-nineteenth century, farmers cleared an increasing percentage of their land, but by the 1910s, they began to recognize the value of woodlots and

---

3 For the figures on farm acreage and clearing for 1880, 1890, and 1900, see: United States Bureau of the Census, Twelfth Census of the United States, Taken in the Year 1900 v. 5 Report on the Statistics of Agriculture in the United States (Washington, D.C.: Government Printing Office, 1902), 142, table 11, microfilm reel A-1, Indiana State Data Center, Indiana State Library, Indianapolis. (Hereafter Data Center.) Unimproved land is used here as it is in the census—most simply defined as uncultivated land, although many other variables affected its status.

undertook to manage areas of their land for forest products. Able to obtain this remuneration with minimal work during the winter, farmers parlayed a relatively low average return into a $1,460,252 contribution to the industry in stumpage alone for 1909.\(^5\) The importance of farm-produced timber to the industry demonstrates the widespread participation of agriculturists in commercial harvest of the state's forests.

In its first year, 1901, the Indiana State Board of Forestry recognized farm woodlots as the main source of future timber in the state. The Board of Forestry urged restriction of woodland grazing and informed farmers that with proper management woodlots could provide profits well into the future.\(^6\) As the value of the available wood rose, especially when the industry perceived impending shortages, timbermen had an incentive to seek agricultural woodlots for resources. The Board of Forestry attempted to manage woodlots, also demonstrating the importance of the source. Throughout the Board of Forestry's existence (1901-1917) and in its subsequent incarnation as the Division of Forestry within the Indiana Department of Conservation (1918-present) the institution continued to stress woodlot management for future industrial uses.\(^7\)

\(^5\) Agricultural Census for 1910, Data Center, 729, table 134. 75,397 farms (approximately 35% of the state total) responded for the table. The average reported value of forest products per farm was $74.

\(^6\) Board of Forestry, Bulletin Number 1 (1901), 21.

\(^7\) The Indiana State Board of Forestry was an agency created to respond to deforestation in the state. The Board of Forestry was composed of five members, one each to represent farmers, the Indiana Retail Lumber Dealers' Association, the Indiana Hardwood Lumbermen's Association, Purdue University (held by Stanley C. Coulter for the duration of the agency's existence), and a final member to act as State Forester and secretary. The Board of Forestry pursued a wise-use agenda throughout its existence, urging reforestation, reduced waste, incentives for landowners to adopt scientific forestry, and after 1902, experimental management at the state's only forest reserve, a 2,000 acre tract in Clark County, with an experiment station in Henryville (see Map One). For various discussions of the Board of Forestry's creation and purpose see Daniel DenUyl, "History of Forest Conservation in Indiana," Proceedings of the Indiana Academy of Science, 66 (1956), 263, 267; Daniel Lee Clark, "The Indiana Hardwood Industry: A Study in Small Business Enterprise" (Ph.D. diss., Purdue University, West Lafayette, IN, 1986), 396-400; and Robert Allen Frederick, "Richard Lieber, Conservationist and Park Builder: The
Farmers' contributions of timber were essential to the growth of the industry and were important supplements to agricultural incomes. In 1909, a representative year, farmers added $1,163,192 worth of logs to the state's timber industry. Comparison of stumpage and cut timber sold in 1909 reveals a rough difference of $300,000 in favor of stumpage over logs, an outgrowth of seasonal restrictions. The flourishing barrel stave industry of Brown County, Indiana, in the 1880s and 1890s was based on timber supplied by farmers (see Map One for the location of Brown County). In this case, the introduction of a major industry with high demand caused an aberration in relations between agriculturists and timbermen. Rather than concentrate on stumpage, farmers became the primary harvesters, directly enabling the growth of the operation. This exception reveals farmers abandoning their fields to become year round timber-suppliers. Farmers rarely took this direct action, but they were integral to supplying the necessary resources for the industry throughout the state.

To understand the expansion of the timber industry from its agricultural roots we must first recognize the change in the procedure of reducing a tree to dimension lumber, the particular forest product central to this study. As these procedures changed in the nineteenth century timbermen gained in ability to harvest and utilize greater amounts of forest resources. In the early- to mid-nineteenth century, a slow, labor- and resource-intensive process was required to transform a tree into dimension lumber. Loggers selected the most valuable and accessible trees, then proceeded to fell them with a
woodsman's axe combined with wedges when necessary. The high degree of labor expended in this process meant that only the largest and most choice trees would provide a profit. Loggers generally left a stump of approximately three feet to ease their labor, a practice that left a significant amount of wood in the stump. In the process of obtaining the desired tree, harvesters demonstrated little concern for other timber. Loggers assumed sufficient forests would always exist and knew small and less economically desirable species would not develop into viable timber during their ownership of the rights to log the tract. As a result, felling and removal of large trees often destroyed many nearby smaller ones inhibiting the regeneration of the forest.

Creating a marketable log from a standing tree took a great deal of effort and wasted large amounts of wood in the process. After felling the most merchantable trees, timbermen removed the tops and limbs and cut the logs into manageable lengths for removal with a horse-drawn sled or wagon depending on the season. Winter operations with sleds proved the most ubiquitous, especially among farmers. Removing logs in this manner did not necessarily injure standing timber, but insufficient planning of routes often did lead to damage of live trees. Henry S. Graves, Dean of the Yale School of Forestry and former chief of the United States Forest Service (USFS), studied the history of waste in forest use. He concluded that throughout the nineteenth century and into the twentieth century thoughtless skidding of logs was second only to careless felling as a destructive behavior of early loggers, however, Graves did acknowledge the significant impact of

wildfires resulting from the accumulation of logging slash. 14 Dependent exclusively on human and animal power, early timbermen performed their tasks under technological and seasonal restrictions.

Hardwood logging differed from softwood operations primarily in the method of transport to market. Loggers sent the relatively light conifers to mills by floating them down rivers in log drives. 15 Because hardwoods do not float, loggers were forced to transport them by overland means. 16 Horse-drawn wagons and sleighs became some of the most defining images of the Indiana timber industry until the mid-nineteenth century. Rough and muddy or dusty roads greatly restricted the possible size of the timber market.

Milling logs into boards remained labor intensive and economically risky during most of the nineteenth century, largely because sawmills depended on waterpower. Watercourses provided inefficient and sporadic power for circular saws. Restricted to sites along streams with relatively predictable flows (or those easily dammed for millponds), millers could rarely locate near either the resource or the market, thus greatly diminishing profitability. Mill owners also had to cope with droughts and floods. As logs arrived, mill-hands loaded them onto the skidway with hand tools such as cant-hooks. 17


15 Broadleaf trees are generally considered hardwoods, while the terms conifer and softwood can be used synonymously. For more detailed definition see Allen Wickman, ed., The Forest Management Digest (Park Rapids, MN: Forestree Farmers of Minnesota, Inc., 1982), 125 and 387. On the logging of conifers, see: Richard W. Judd, Aroostook: A Century of Logging in Northern Maine (Orono: University of Maine Press, 1989).

16 Charles C. Deam, Trees of Indiana (Fort Wayne, IN: Fort Wayne Printing Co., 1931), 313-314. Deam appends a table of specific densities of several trees to his text to illustrate buoyancy.

17 A cant-hook is an implement for grasping and rolling logs. It has a handle of approximately four feet for leverage and a two piece iron top. The end to grab logs is a fixed hook with a swinging hook attached below it; the two pieces meet on opposite sides of the log to allow the timberman to grasp and move it.
Workers then loaded a log onto the carriage and passed it slowly through the saw, producing a slab or a board. Laborers piled each board for shipment and removed waste products, often into the waterway below the waterwheel. When the log had finally been reduced to waste and lumber, a great deal of human and animal labor had been utilized to augment the hydraulic power source.

The importance of understanding the progression from tree to dimension lumber lies in the changes that occurred during the late-nineteenth and early-twentieth centuries. The reliance on water, human, and animal power, use of circular saws, and locations near streams characterized Indiana's timber industry until the mid-nineteenth century. By the last third of the century, steam power and railroads (and to a lesser degree bandsaws) had revolutionized the industry.

Although the felling and cutting of trees into logs remained basically the same until the 1920s, the technology of manufacture and distribution developed rapidly in the last third of the nineteenth century.18 The evolution of steam-powered mills operated at the site, independent of watercourses, saved loggers the costly and time-consuming trip to the mill with logs.19 The adoption of bandsaws (although important in large mills, bandsaws had relatively little impact on Indiana, dominated by small operations) and steam engines at these mills, increased the speed at which logs became boards.20 After they created marketable lumber, mill owners utilized railroads (easily accessible from most anywhere within Indiana by the last quarter of the nineteenth century) to carry lumber to urban and industrial consumers.21 Without significant alterations of the nineteenth-century reliance

20 Thomas R. Cox, et al., This Well-Wooded Land: Americans and Their Forests From Colonial Times to the Present (Lincoln: University of Nebraska Press, 1985), 158.
21 On the railroad network within Indiana and its connections to national lines, see George
on human, animal, and water power, the deforestation Indiana witnessed in the late-nineteenth century would have occurred far less rapidly.

The primary aspects of concern for this study are logging and dimension lumber, but hardwoods were used in industry for a variety of applications in the late-nineteenth and early-twentieth centuries, such as, veneer, cooperage, and other manufactured goods. Large wood-using operations, classified by their level of production and capitalization, participated in Indiana's timber industry, but remained a minority in terms of overall contributions. In the 1850s, veneer producers in Indiana began to use water powered circular saws in place of the hand-sawing techniques of the 1840s, but did not become notable users of timber until the last third of the century. Continued technological advancements and an aggressive marketing campaign to offset the public's negative view of veneer rather than solid wood products allowed veneer production to achieve status as a separate category in the Federal Census of Manufacturers in 1905. In the first decade of the twentieth century, Indiana began to produce veneer on a large scale, especially from high-quality hardwoods. The Board of Forestry declared: "Indianapolis is the largest veneer center in the world," in its report for 1902. This report, compiled by foresters and influenced, to a degree, by political motives, revealed the role of timber in the state's economy. Indiana maintained a position of national importance in the production of


veneer despite importing the majority of the raw timber by the 1910s, a demonstration of the industry's domination by relatively large and stable corporations, although many producers did relocate nearer their sources of timber.24

Cooperage resembled the veneer industry in its large organizational structure, but depended on less stable manufacturing establishments. Southern Indiana was the center of cooperage producers in the state from the late-1870s to the late-1880s. The owners of barrel making operations moved into the locale and created a significant market for staves, met by local and recent migrants to the area clearing forests and utilizing steam power to enhance production. In this particular portion of Indiana, the cooperage industry provided significant short-term profits to the residents, but devastated the region in the long run by removing the forest that sustained the area's economy. Despite significant investment in physical plant and community development, owners of these operations moved on to southern Illinois when local resources were exhausted.25

The Indiana hardwood industry of the late-nineteenth and early-twentieth centuries produced a variety of manufactured goods, most notably railroad materials (ties, bridges, and rolling stock), furniture stock, agricultural implements, wagon and automobile bodies, and boxes and crates. Finished products accounted for less of the timber harvested or imported into Indiana than dimension lumber but did provide a significant market for forest resources. Furniture and other manufacturing of timber tended to appear early throughout the state and concentrate in stable communities. Batesville, Jasper, and Indianapolis became centers of wood-products manufacturing in Indiana and retained their industries for several decades. Factories required significant capital investment and success was dependent on creating a position as a reputable firm with a steady market. To meet these restrictions, manufacturers established international and national trade

24 An overview of the rise of Indiana's veneer industry can be found in ibid., 152-154.  
networks to procure materials and distribute goods. Forest industries of this type differed from the small and mobile dimension-lumber producers in Indiana.26

Most industrial timber use in Indiana at the end of the nineteenth century and the beginning of the twentieth century occurred in small mills producing dimension lumber. The various other applications of hardwoods at the time had a significant impact on the harvest of timber, but affected the state in a lesser degree.27

With increased market accessibility and heightened demands, forest products became more valuable, while manufactured goods and alternatives to wood heat convinced farmers to devote more of their woodlot timber to sale. This expansion of resources created an increase in production as new milling operations capitalized on the availability of timber. Mills remained small to most efficiently utilize the limited rate of supply from agriculturists, although supplemented by hired loggers. The small size of mills also allowed them to harvest in an area until the resource was depleted then move on, an exploitative, but highly productive procedure.

The timber industry in Indiana expanded greatly in the decades preceding 1890, as demonstrated by statistics regarding the number, distribution, employment, production, and total valuation of mills. The earliest statistics for lumber mills in the state (1840) reveal that 1,248 mills produced $420,791 worth of lumber.28 By 1860, the number of

27Of the various aspects of the timber industry in Indiana during the era, the cooperage industry has received the most scholarly treatment, see: Nicholson, "Swine, Timber, and Tourism," ch. 3. Furniture manufacturing is represented by numerous popular studies created for antiquarianairians. See: Ralph Kylbe, A History of the Old Hickory Chair Company and the Indiana Hickory Furniture Movement (Lake George, NY: Ralph Kylbe Antiques and Rustic Publications, 1995). The veneer and manufacturing component of the timber industry promise to be fertile areas of study in the future.
mills had risen by only 29, to 1,277, yet they increased output to $4,271,600.29 This phenomenal increase in productivity coincides with the introduction of new technologies and methods. To appreciate the industry's expansion one must consider mill sizes. Mills continued to employ few individuals and demand low investments, leaving technological advancement as the variable in the jump in output. These small operations allowed widespread involvement in the timber industry.30

Machinery designed to reduce the size of operating crews, the amount of required skill, and the permanence of mills led to an industry characterized by those attributes. In his Geological Report for the State of Indiana (1876) the Indiana State Geologist lamented the increasing numbers of sawmills in previously untouched woodlands. "[P]ortable sawmills have gone to the most inaccessible localities, until there is scarcely to be found a spot from which the best timber has not been culled."31 The organizational and the economic practicality of mobile operations preserved the character of Indiana mills. Daniel Lee Clark, a historian who has studied Indiana sawmills of the nineteenth-century, determined that small family-ownership dominated the industry into the twentieth century. He argues that a minor investment furnished a miller with the necessary equipment and


30For a discussion of the role of technology in perpetuating Indiana's small-scale timber industry, see: Clark, Entrepreneurs in Hardwood, 3 and 43. For statistical accounts of the number of employees, value of product, and amount of capital invested in milling and harvesting operations throughout the state see the federal censuses of manufacturers. For an example, see: United States Bureau of the Census, Thirteenth Census of the United States, Taken in the Year 1910 v. 9 Report of the States on Manufacturing in the United States (Washington, D.C.: Government Printing Office, 1913), p. 192, table 9, p. 198, table 10, and p. 200, table 11, microfilm reel M-1, Data Center.

greater capital outlays brought little additional benefit. Based on this argument, the dominance of small mills is logical. Offering high return on investment and the ability to relocate to areas of profitable timber, small portable mills provided Indiana millers with the ideal tool for the manufacture of hardwood lumber.

These mills addressed the needs of the Indiana timber industry and significantly determined the use of resources. Their portability was their most notable characteristic. Most Indiana timber by the mid-nineteenth century existed in scattered stands throughout the state. Operations capitalizing on ease of relocation reinforced this pattern.

Mill owners located their operations near raw timber and utilized as much of the forest as profit allowed, then moved on. To reduce the high costs of transporting bulky logs, harvesters and millers operated on the same or adjacent sites. Most Indiana sawmills continued to receive the majority of their timber from within forty miles of the mill until the twentieth century. Transportation became more efficient by the last quarter of the nineteenth century, which allowed for more integration of market and producer. Between 1880 and 1900, Indiana remained among the nation's six most productive states in terms of lumber output (measured in board feet), despite the inhibiting factor of being a net importer of raw timber by the mid-1890s. This shift in supply discloses the fate of timbermen. Mobile operations opened previously untapped forests to harvest, effectively eliminating timber across much of the state. No longer able to operate in large portions of

32 Clark, "The Indiana Hardwood Industry," 120-122. Although Clark identifies Indiana's small-scale hardwood manufacturers as unique, he generalizes that mills in the Central Hardwood Region were capitalized well below their counterparts in other regions.
33 Clark, "The Indiana Hardwood Industry," 100.
34 Several sources discuss this development. For some concise examples, see: Frederick, "Richard Lieber, Conservationist and Park Builder," 138; Board of Forestry, Bulletin Number 2 (1902), 4, 11; and Hoover, et al., Indiana Forest Resource Management Guide, 3. A board foot is the most common measurement of lumber products. It is defined as a one inch thick piece of lumber of one square foot in surface area.
Indiana, harvesters moved to still viable timber regions (primarily states in the West and South), leaving millers lacking both raw materials and suppliers within the state.\textsuperscript{35} 

Until the mid-1890s, scattered but relatively untouched and valuable forests throughout the state remained accessible to portable mills able to develop migratory practices while evincing little concern for local economies or environments in which they operated. Before the turn of the century, the effort to locate and exploit isolated forestlands had facilitated the removal of most of Indiana's high-quality veneer timber. Small stands in Gibson and Posey counties accounted for nearly all of the veneer resources remaining in the state, and these areas were harvested in the 1890s (see Map One).\textsuperscript{36} The National Conservation Commission reviewed forest use throughout the United States in 1909 to determine problems and solutions. The commission classified timber harvest in three stages. The first two stages were exploitative, to enrich the self, then to benefit the corporation, the final step returned profits to the society through a long-term investment in infrastructure and civil improvement by the mill owner.\textsuperscript{37} By applying these categories to the Indiana timber industry, it is apparent that most operations in the state remained in the first two categories until the twentieth century. Large corporations did not replace individuals as the primary owners until well into the twentieth century, and even then, corporations continued to exploit their resources and move on relatively quickly.\textsuperscript{38} The

\textsuperscript{35} For a discussion of how portable milling operations assisted in the removal of dispersed stands of timber, see: David A. Clary, \textit{Timber and the Forest Service} (Lawrence: University Press of Kansas, 1986), 22. For an Indiana example see Daniel DenUyl, "Forests of the Lower Wabash Bottomlands During the Period 1870-1890, " \textit{Proceedings of the Indiana Academy of Science}, 67 (1957): 244. Areas of heaviest deforestation are discussed in chapter 2.  

\textsuperscript{36} Clark, \textit{Entrepreneurs in Hardwood}, 67.  


\textsuperscript{38} See Clark, \textit{Entrepreneurs in Hardwood}, on the size of Indiana timber operations.
quality of remnant stands and the characteristics of ownership existed as reflections of the wasteful practices of the industry.

Unlike more permanent, large operations, Indiana's small mills depended on circular saws. The National Conservation Commission determined circular saws (generally with a 0.25 inch loss in kerf) were less costly for mobile operations than bandsaws (generally with a 0.125 inch loss in kerf), because bandsaws required more time and care to set up and maintain. Small and mobile producers in Indiana thus preferred circular saws with an obvious impact on forests. Each cut made by a circular saw produced twice as much sawdust as one made by a bandsaw, evidence of the millers' concern with mobility rather than reducing waste. A pattern of intensive harvesting of an area's resources followed by abandonment of the region characterized the timber industry in Indiana from 1870 to 1900. The effects of this rootless practice appeared in environmental and economic devastation.

The growth of a timber industry based on mobile operations offered short-term economic benefits and long-term devastation to rural communities in Indiana. John McGregor's operations in Brown County, Indiana, demonstrate financial dependence on the growth of the timber industry. McGregor moved his operation to southern Indiana in the 1870s, and during the initial boom, he hired several men and infused money into civic projects. By 1886, the area's forests were depleted and he relocated to southern Illinois. With minor investments in an area and a belief that resources were inexhaustible, timbermen pursued maximum harvests then moved on to begin again.

---

39 Gannett, Report of the National Conservation Commission, 552.
40 Clark, "The Indiana Hardwood Industry," 146-148, discusses mills leaving Monroe, Morgan, Grant, and Greene counties, and relocating in Tennessee, Kentucky, West Virginia, and Wisconsin (see Map One for the location of Indiana counties).
41 McGregor's industry in Nashville, Indiana, is discussed in Nicholson, "Swine Timber and Tourism," 103-120.
New technological and scientific developments (e.g., railroads, steam power, and forestry) allowed timber users to increase their rate of harvest throughout the nineteenth century and into the early-twentieth century. Railroads used forest products for their construction and maintenance and opened urban and distant markets, while steam power greatly increased the speed of production. Scientific forestry provided concerned timbermen with the security that no timber shortage would occur. These developments each contributed to the removal of forests, but when applied together they were the basis for the dramatic expansion of timber harvest and use in the late-nineteenth century.

Railroads became the dominant form of transportation for forest products in Indiana during the last half of the nineteenth century. By 1854, over 1,400 miles of track existed in the state.\(^{42}\) Various estimates consider the date for full coverage of Indiana by railroads between 1860 and 1880. Regardless, by 1880 "this rail network linked Indiana with Chicago, Cincinnati, Cleveland, Louisville, Pittsburgh, St. Louis and other more distant American cities."\(^{43}\) Complete coverage of Indiana with railroads by 1880 was preceded by significant expansions of mileage beginning in the state by 1860.\(^{44}\) Railroads opened remote portions of the state to harvesters and allowed mill owners to sell products in a national market, tapping a much larger demand. Without a viable market, timber production would have remained a local activity. Local and regional demand for wood for building and fuel could have sustained only a minor industry.


The laying and repairing of rail lines drew on the timber industry for a supply of ties, bridge building materials, and lumber for supporting infrastructure. Indiana became one of the most important states in the nation in meeting this need. The importance of bridges as a use of lumber declined relatively early, since by 1870 steel was becoming the material of choice in bridge building. Ties initiated a new and lucrative product for the timber industry that required constant supply. Early ties were cut from white oak, walnut, or chestnut and usually rotted to uselessness within seven years. By 1890, railroads utilized approximately eighty million ties per year. This figure represents national usage, of which, Indiana occupied a significant position, demonstrated by the state's output. The Central Hardwood Region supplied over 20 percent of the national demand, with Indiana one of the leading producers in the region during the first decade of the twentieth century. The amount of hardwood timber devoted to ties reveals the importance of railroads as a buyer of timber products.

Railroads also opened new markets in distant regions and nearby urban centers. By the last third of the nineteenth century, Indiana was effectively linked to the large cities of the East as well as the rest of the nation. By providing access to urban markets the railroad placed Indiana's timber industry within the competitive national context demanding continuous high output to maintain profits. The most significant urban markets opened to Indiana producers (in order of market shares) were Chicago, New York, Philadelphia, and Baltimore. St. Louis and Cincinnati, continued to receive

46 Carhart, Timber in Your Life, 32.
47 Cox, et al., This Well-wooded Land, 113.
48 Board of Forestry, Bulletin Number 6 (1906), 137, and 141.
50 Graves, "Forests," 238.
shipments of hardwood products as they had before rail transportation. In Indiana, the railroad played an essential role in expanding the industry in the late-nineteenth century.

Innovations in milling technologies in the last thirty years of the nineteenth century allowed sawmills to increase production greatly. Portable steam engines, and to a lesser degree bandsaws, revolutionized milling in the era. Small mills, the vast majority in Indiana, continued to use circular saws but did employ steam power. Large, stationary operations, utilized bandsaws when possible, but also utilized circular saws. Bandsaws offered an opportunity to increase productivity, reduce power demands, and obtain higher profits through less waste, but demanded greater care in use and more time in set up. For mills producing large volumes of lumber the decrease in waste and increase in output offset the need for a more stable operation.

Historians agree that bandsaws were first used in Indiana during the mid-nineteenth century and that the saws were a significant technological development where they were implemented. The records of the Hoffman Brothers Company of Fort Wayne, Indiana, demonstrate that this company introduced the bandsaw to the United States in 1870, in Fort Wayne, an indication of Indiana's acceptance of advancements in milling technology. The Hoffman Brothers sold their mills throughout the country for use in

---

51 Clark, Entrepreneurs in Hardwood, 107, 112, and 114.
52 The most common use of bandsaws in large operations was as resaws. In this capacity a circular saw made the initial cuts on each log and the bandsaw was used to reduce the slabbed log to boards of the desired thickness.
53 For examples of the reasons for the use of bandsaws, see A. E. Shull to P. O. Master (Ft. Wayne), April 13, 1872 [Shull sent the request to the post office because he did not have the Hoffman Brothers Company address] and T. P. Morse to J. R. Hoffman & Bros., August 9, 1872, both in Box 1, Folder 2; Loehr, "Saving the Kerf," Box 1, Folder 7; "Testimonials," and "Hoffman's Patent Log Band Sawmills," (pamphlet), Box 1, Folder 9, Hoffman Brothers mss., Lilly Library, Indiana University, Bloomington. (Hereafter cited as Hoffman Bros., Lilly).
54 The Hoffman Brothers began with a hardwood mill specializing in chair stock and black walnut lumber. In 1869 the eldest brother, J. R., imported and patented bandsaws, and began aggressively marketing and manufacturing them in the 1870s. Loehr, "Saving the Kerf," Hoffman Bros., Lilly, discusses this company and bandsaws.
the manufacture of both softwoods and hardwoods. Bandsaws, practical by the end of the 1870s, offered greater speed, lower energy requirements, and less waste when they could be set up and operated without frequent moves. By the 1890s, these qualities had been recognized and the saws were contributing to the productivity of large mills. This advancement, although significant, had a limited impact on the Indiana industry dominated by small mills.

Bandsaws allowed large millers in Indiana to increase their profits by the late-nineteenth century. In 1949, an overly zealous booster for the use of bandsaws studied the history of the technology and surmised that in the last third of the nineteenth century, these saws created 83 board feet of sawdust per thousand board feet of lumber, while circular saws manufactured 392 board feet of sawdust per thousand board feet of lumber. Circular saws, until the early-twentieth century, produced roughly twice the amount of sawdust as bandsaws. The disparity between circular saws and bandsaws was exacerbated by steam power and the resultant increase in the amount of timber fed into mills. The ability to obtain greater profits by producing less waste allowed Indiana's few large mills to increase their participation in the new markets despite the increasing scarcity of prime timber.

55 "Testimonials," (no date, printed flyer proclaiming the virtues of Hoffman Brothers bandsaws) Hoffman Bros., Box 1, Folder 9 (printed material), Lilly.
56 Clark, "The Indiana Hardwood Industry," 92, and 171; and "Hoffman's Patent Log Band Sawmills," (Indianapolis: no date, pamphlet), Hoffman Bros., Box 1, Folder 9, Lilly.
57 Loehr, "Saving the Kerf," 2, Hoffman Bros., Box 1, Folder 7, Lilly. Based on the Hoffman Brothers' own promotional material stating the relative kerfs of bandsaws and circular saws at .125 inches and .25 inches, Loehr's figures are more useful as the perceived superiority of bandsaws than their true impact.
58 William B. Greeley, Forests and Men (Garden City, NY: Doubleday & Company Inc., 1951), 44, discusses how the decreased waste of bandsaws allowed the timber industry to utilize less valuable timber.
59 For a discussion of these timbering practices and ideas see Clepper and Besley, "Forests," 92-94.
Practical steam engines emerged in relatively the same era as bandsaws and contributed significantly to the ability of Indiana's timbermen to produce on a larger scale. A steam-powered circular saw was able to produce approximately five to eight times as many board feet per day as a similar saw powered by water.\textsuperscript{60} As a result, mills could utilize greater amounts of timber and locate farther from rivers, creating more profitable locations for harvest in the late-nineteenth century. Federal census figures for 1900 demonstrate the recognized superiority of steam power. At the time of the census, steam engines supplied 64,276 horse power to Indiana mills, while waterwheels generated only 698 horse power.\textsuperscript{61} Steam power had a dual impact on the timber industry depending on the type of saw it was used to drive. In large mills with bandsaws, increased production created large amounts of product with little waste. In small operations, predominant in Indiana, steam power coupled to circular saws increased the output of lumber and the volume of sawdust. Although able to manufacture more lumber, a small, steam-powered mill also created more waste.

Development of markets from local to international networks changed the focus from self-sufficiency to commercialism. This change occurred over a sixty-year span from 1850 to 1910. Many factors illustrate the lack of a timber market in early Indiana. Michael Williams determines the value of timber sold in Indiana in 1840 as among the lowest ten states east of the Mississippi.\textsuperscript{62} This lack of a market for timber reveals the common practice of individuals obtaining their own supply of forest products for heating.

\textsuperscript{60}Michael Williams, Americans and Their Forests: A Historical Geography (Cambridge: Cambridge University Press, 1989), 167. Williams draws his figures from Alfred J. Van Tassel and David W. Bluestone, Mechanization in the Lumber Industry, 8. Water was apparently never used to power bandsaws.  
\textsuperscript{62}Williams, Americans and Their Forests, 135. Williams gathers data for this comparison from the U.S. Census of 1840.
and building. The United States Census determined that by 1909 Indiana annually produced 556,418 million board feet of lumber for sale, with another 31,472 million board feet marketed as veneer. This large output required a broad market, which the Indiana timber industry found throughout the nation and the world. To operate in this enlarged context, timber producers in Indiana required new sources of raw materials. By the mid-1890s, Indiana millers depended on out-of-state timber for supply. The massive industrialization and urbanization of Indiana and the United States stood at the center of these changes. Indiana emerged as a significant force in the national timber industry in the twenty years before, and the ten years after, the turn of the century. Originally a self-service activity, timber production became a major industry for Indiana by the early-twentieth century.

In the last decade of the nineteenth century, Indiana mill owners with the necessary capital began to augment the supply of timber obtained from in-state forests with imported logs because of overharvest within the state. Indiana led the nation in the dollar value of hardwood lumber produced in 1900, but the industry receded after it expanded beyond its resource base. In its early stage, Indiana claimed a significant position in national trade networks. The national importance of the state's timber industry fell by 1917, as it imported 50 percent of all raw timber and an even higher percentage of veneer logs. Because veneer production requires the choicest timber—large, straight, free of knots and other defects—the need to import these logs is an indication of the quality of remnant forests in Indiana. Stanley Coulter studied importation of resources in Indiana's timber industry and listed the source of timber for 4 veneer companies in 1909. Of the 4 he

64 Board of Forestry, *Bulletin Number 7* (1907), 157.
discussed, 1 purchased under 25 percent of its timber from within Indiana and another imported all of its resources. As state supplies dwindled and demand increased, Indiana timbermen began to rely more heavily on national and international trade networks to maintain profits.

To meet the demands of the market economy Indiana timbermen began to exploit previously overlooked tree species. Settlers and the early commercial harvesters only cut trees promising sure profits. Charles Deam, State Forester from 1909 to 1913 and again under slightly different auspices from 1917 to 1928, discusses the change in the availability of prime species in his *Trees of Indiana*. He identifies white oak as among the most valuable timber in Indiana, with specimens five feet in diameter at breast height (dbh) common in the early-nineteenth century. Deam compares this abundance of high quality trees to the forests in 1911, which he determines contained very few white oak of three feet dbh. To replace these valuable trees, Indiana timbermen imported high-quality logs or began to utilize less desirable species. Stanley Coulter noted the shift in the species harvested by the timbermen attempting to maintain profits. He stated: "[T]he eager search for beech . . . [a wood of only moderate value] is a fairly conclusive evidence of the paucity of forms of higher quality in the forests of the state." Indiana producers were able to maintain their economic position in national and international markets and continue to meet the growing demand for forest products by utilizing new tree species and technologies.

---

68 For specific discussions of several of the individual species substituted for more valuable woods, see: Deam, *Trees of Indiana*. Some of the best examples are chinquapin oak and red oak, both used to fill demands for white oak, s.v..
69 Coulter, "Forest Conditions in Indiana," 448.
The Central Hardwood Region dominated national hardwood harvest and manufacture from the 1870s until the turn of the century. Clark determines Indiana's position in the national timber industry by analyzing the federal censuses of manufacturers. He notes that the state produced the greatest amount of hardwood lumber in the nation in 1870, 1880, and 1900, and the second highest amount in 1890. After 1900, as production from Indiana and the Central Hardwood Region fell off, the national industry adapted to southern hardwoods to maintain its growth. Oak, the most commonly used hardwood, reveals the respective contributions of different producers to the industry. Indiana led the nation in the output of oak products from 1870 to 1900, but by 1910, had fallen to ninth among producing states. Continued intensification of mechanization and maturation of science-based forestry allowed national output to climb from approximately 4.25 billion to 4.5 billion board feet per year of all hardwood products between 1900 and 1910.70

The high value of hardwoods added an incentive for timber producers in Indiana to enter the national market and achieve the greatest output possible. With high returns for logs, landowners harvested their woodlands heavily and helped stimulate the growth of the industry. Pine challenged hardwoods as the major source of timber throughout the era. Pine logs sold for about fourteen dollars per thousand board feet in 1879, and at such a low price forced people attempting to profit from softwoods to undertake large-scale operations.71 Hardwoods differed because of their higher value. Single trees regularly sold for one hundred dollars each in the late-1870s.72 High prices allowed timbermen to attain profits through small-scale production and encouraged many people to enter the industry. As an illustration of the high value of individual hardwoods, in 1920 the Indiana Department of Conservation considered purchasing 400 acres in Clark County, near the

70For the statistical information in this paragraph, see: Clark, Entrepreneurs in Hardwood, 33-35. Based on the federal decennial censuses of manufacturers.
71William Cronon, Nature's Metropolis: Chicago and the Great West (New York: W. W. Norton & Company, 1991), 200, for the dollar amount, and 266, for the quotation.
72Bramble and Miller, "Forestry," 549.
state's only forest reserve. Charles Deam surveyed the land and reported a density of only three saw-log-quality trees per acre, yet recommended immediate purchase, as the industry within the state had grown to such a degree that significant competition existed to purchase even this minimal stand of timber. The hardwoods' high value placed the tract beyond the state's ability to purchase when bids were taken.73

Indiana gradually emerged as a major timber producer in the second half of the nineteenth century, then as a result of massive deforestation dramatically lost standing in the first decades of the following century. Early agricultural clearing disposed of the last large unbroken forests as an impediment to civilization before timber harvest became a significant industry in the state. Timbermen then introduced new technologies to harvest the majority of Indiana's remaining high-quality forests. With the depletion of prime timber, harvesters shifted to lower-value species—a fact that caused some residents of the state to take notice of the changes in their surroundings. The variety of methods employed to address forest loss included the emergence of a vibrant conservation movement, embedded in the context of the Progressive reform movement.

Chapter Two:

Deforestation in Indiana

"At the rate at which the greedy lumberman is cutting down our forests . . . it will be only a few short years before this wonderful natural resource will be gone forever." (1909)¹

"The Brown County timber boom lasted less than a decade. It started in 1879 and concluded in 1886-1887."²

When Indiana entered the Union in 1816 it was heavily forested, but over the course of the nineteenth century lost its wooded status. By the 1910s, the only remaining forests in the state existed because humans desired to protect them. Both farming and timbering played central roles in the removal of Indiana's woodlands. Over the nineteenth century, agricultural clearing accounted for more forest removal than logging, but by the last thirty years of the century, gave way to logging as the key agent of deforestation. By the turn of the century the combination of these factors led to an environment greatly different than what had preceded it by fifty years.

In discussing Indiana's natural environment, observers at the turn of the century noted the massive changes they had witnessed in their own lifetimes. Some individuals compared the loss of resources in the state to more distant eras; very few considered the state's diminished forest cover in the late-nineteenth century as preferable to the pre-

¹Herman S. Chamberlain, Indianapolis Star, August 1, 1909, magazine section, p. 8.
settlement forests. Removal of forests for farming and timbering eliminated premium trees from almost the entire state, as noted in a report that compared Indiana forests of the 1850s and 1870s. The feeling of loss expressed by many individuals reflected an idealized depiction of the past, but not a true desire to return to more primitive ways of life. Support in newspapers for the idea that agricultural and industrial uses of forests drastically reduced the quality of nature in the state demonstrates public opinion. The Indiana Retail Lumber Dealers' Association determined that of the 300,000 "magnificent square miles" of timber that existed in Indiana at statehood, only 1,000 "commercial[ly] harvestable" square miles" of forest remained in the state by 1901. Similar statements of loss dominate the reminiscences of people comparing turn-of-the-century forests and those of twenty to one hundred years earlier. Often these individuals overstated reality but a dramatic reduction in forested area had truly occurred.

Before commercial harvest of timber commenced in Indiana, agriculturists began their drive to clear millions of acres for cultivation, a practice that left farmers with small woodlots to meet their needs for personal use and limited sale. Because farmers did not clear infertile or agriculturally inaccessible land and their need of wood for fuel and the repair and construction of fences and buildings, the forests of Indiana took on a distinctive

---


4 From an article discussing the Association's annual meeting. "Indiana Forests," Indianapolis Journal, January 20, 1901, p. 3. "Magnificent" and "commercial," are not defined but the intended meaning is clear. A square mile equals 640 acres.

form—scattered woodlots. From the time of settlement in the region to 1850, farmers in Indiana cleared 5 million acres.\(^6\) They removed another 1.9 million acres in the 1860s, then clearing peaked at 3.6 million acres in the 1870s. In the 1880s, clearing held at around 1.3 million acres, and ended the century with 1.7 million acres in the 1890s. Agricultural clearing continued to fall until it reached a mere 0.4 million acres in the first decade of the twentieth century.\(^7\) After reaching a maximum rate of forest removal in the 1870s, farmers began to recognize the value of maintaining woodlots as they brought the most fertile areas of their land under cultivation. By the last quarter of the nineteenth century, no large-unbroken forests remained in Indiana, what did exist, were woodlots and small forests, where farmers elected not to operate.\(^8\)

Forest clearing for agriculture declined as farms reached the bounds of the productive lands they had access to; yet, not all farmland became cropland. Farmers generally reserved infertile and inaccessible portions of their land for woodlots. One study, reported on by the Indianapolis News, noted that a managed woodlot had supplied all of the heating and construction needs for two families for 30 years, as well as fuel for a steam powered thresher. In addition, the woodlot provided its owner a net annual profit of $125 from maple sugar and produced $2,000 in commercially sold timber over the 30 year period.\(^9\) By 1900, after farmers had essentially discontinued the clearing of forests, almost one quarter of land under farm-ownership remained "unimproved."\(^10\) Woodlots

---


\(^7\) Williams, *Americans and Their Forests*, 358-360, Williams bases his information on the United States Censuses.

\(^8\) For a general illustration of remaining virgin forest see Michael Williams, *Americans and Their Forests*, 436-437, and 377; Board of Forestry, *Bulletin Number 7* (1907), 144; and Board of Forestry, *Bulletin Number 13* (1913), 86.

\(^9\) The original study was performed by *Country Gentleman*, a popular magazine for hobby farmers, on a farm owned by Oliver Kline in Huntington County, Indiana. "Indiana Forest Profits," *Indianapolis News*, December 24, 1914, p. 6 (see Map One).

\(^10\) United States Bureau of the Census, *Twelfth Census of the United States, Taken in the
had become an important part not only of the farm economy, but also of the entire state economy.

As the amount of forested land in Indiana continued to decrease, farm woodlots became increasingly important to the timber industry. State legislators considered the forest resources of farmlands important enough to designate one seat out of five on the Board of Forestry (established in 1901) for a representative of farmers' concerns. The importance of farms as a source of timber continued to increase into the twentieth century. The average value of forest products from farms (throughout the nation) rose 77.8 percent in the first decade of the twentieth century and another 101.9 percent in the 1910s. Woodlots surviving the expansion of improved land in the 20 years following the Civil War became the predominant form of forests in Indiana.

---


United States Bureau of the Census, Fourteenth Census of the United States, Taken in the Year 1920, v. 6, Agricultural Report for States, with Statistics for Counties and Summaries for the United States in the North, South, and West (Washington, D.C.: Government Printing Office, 1922), 881, table 1. Indiana did not supply statistics for forest resources, therefore, these figures apply to the national market. Despite the lack of numerical evidence, anecdotal information from the State Board of Forestry, the Indiana Academy of Science, and other sources suggest similar values for the state.

The general pattern of conversion of forest land to crop land occurred as farmers settled the most cultivable southern areas of present-day Indiana along rivers in the mid-eighteenth century, migrated to the central region in the first quarter of the nineteenth century, and avoided the marshes and swamps of much of northern Indiana until after the halfway point of the nineteenth century. See Jane R. Nolan, "Resource Protection Planning Process, Indiana Regional Divisions: Agricultural Development in Seventeen Counties in Southeastern Indiana, 1730-1900" (Indianapolis: Division of Historic Preservation and Archaeology, 1988), 3-5, 9, 11, and 15-16; also Barbara J. Milligan, "Resource Protection Planning Process: Agricultural Development in the Nine Counties of Northwestern Indiana, 1800-1900" (Indianapolis: Division of Historic Preservation and Archaeology, 1991), 4-5, 8, and 10.
As agricultural clearing declined in importance as an agent of deforestation, the timber industry rose to replace it. In the last third of the nineteenth century, the timber industry contributed significantly to accelerating the deforestation of Indiana. Large areas of cut-over lands emerged in the wake of Indiana's timber operations in the late-nineteenth and early-twentieth centuries. The timber industry in Indiana began shortly after the Civil War with an allotment of just over 7 million acres of forest to harvest, much of which was in areas farmers dismissed as suitable agricultural regions. Evidence of this trend of forest availability in areas marginal for agriculture can be seen in the concentration of the timber industry. In the last quarter of the nineteenth century, most mills and timber producers in Indiana were located in the northern parts of the state, areas in need of drainage before crops could be planted. By the first decade of the twentieth century the timber industry had depleted that area and shifted to those portions of southern Indiana that had been bypassed by farmers because of its rugged topography. In these areas, forest removal resulted in significant erosion, increases in the numbers of low-value trees, and susceptibility to fire. Selecting and removing high-value species and individual trees

16"Day Near at Hand When Barren Spots of Indiana will be Ornamented with Trees and the State Domain will be One of Shade and Beauty," Indianapolis News, October 8, 1910. This article documents the distribution of mills in Princeton and Huntington counties by discussing where they had operated in the past and where they remained (see Map One). William L. Jennings to T. J. Lindley July 18, 1904 (receipt), in Box 1, Folder 18, Jennings Family Papers, 1796-1945, Coll. No. 445, Indiana Historical Society, Indianapolis, (hereafter cited as Jennings Papers, IHS), documents the sale of 7,550 board feet of siding by Jennings, a Scott County farmer (see Map One). His family produced timber products over several generations, with a peak in sales in the late-nineteenth and early-twentieth centuries. An excellent discussion of the rise of the timber-products industry in southern Indiana at the turn of the century can be found in Nicholson, "Swine, Timber, and Tourism," 106-138.
of superior quality contributed to the increasing dominance of inferior types, as more desirable timber trees were not able to reestablish themselves for roughly a generation.

In the late-1890s, most of the remaining timber in Indiana was in the southern part of the state, much of which was clear-cut and sold to distant markets within the decade. In the twenty years preceding this harvest, farmers in the region had sold large amounts of timber to manufacturers. After intense harvest by timbermen, the region lapsed into economic destitution. Daniel Lee Clark (an historian of the economic aspects of Indiana's timber industry) studied the state and determined that harvesters had removed most of the marketable timber by 1900. He argued that Monroe, Morgan, Owen, and Green counties in south-central Indiana exemplified this depletion (see Map One for the location of Indiana counties). This was an agricultural region dotted with farmers' woodlots, where a limited lumbering industry peaked between the 1870s and the 1890s. In these twenty years, timbermen cut heavily in existing woodlots, and then moved further south into the nonagricultural portion of the state. By the last decade of the nineteenth century, the primary operations in each county could no longer obtain enough native timber to remain in business. The inability of timber producers to obtain materials in formerly productive regions demonstrates the over harvest common to the industry.

Competition between closely situated mills and the belief that forests were inexhaustible combined to accelerate the waste of timber. Excessive competition increased the misuse of resources as the manufacture of forest products was limited only by the possible speed and volume of output. The success of one producer led others to enter the industry and increased the level of competition and the drain on forests until deforestation removed the possibility of profitable activity. Many timbermen operated in

19 Nicholson, "Swine, Timber, and Tourism," 106. Nicholson analyzes the increased competition in the barrel stave industry of Brown County, primarily dependent on white
this way because they believed forests would supply an indefinite harvest. Even after this view became widely discarded by industrialists the intense competition of the market forced timbermen to continually increase production to maintain profits as prices for resources rose. Until producers recognized unrestrained competition as a threat, deforestation remained as the legacy of the industry.

Two indicators illustrate the amount of deforestation that occurred during the nineteenth century. The remaining species within the state changed noticeably, and timbermen sought resources beyond the boundaries of Indiana. Charles Deam noted the change of the species in Indiana's forests in his Trees of Indiana. The first revised edition (1921) provides more analysis of species loss than the original edition (1911). His comments on the status of premium timber species demonstrates the transformation of forests in the state. Deam observed that white oak, "the most important timber tree in Indiana," had been replaced almost entirely by the inferior red oak in manufacturing. Tulip trees existed only as a shadow of the much larger specimens of the past, wild cherry had become a casualty of its popularity for furniture, and basswood was "practically exhausted." According to this interpretation, trees of the twentieth century reached much smaller size than their predecessors. With less valuable trees dominating Indiana's forests, the timber industry and the state's foresters increased their efforts to replant cut-over lands with productive species.

The second indication of the extent of deforestation in Indiana--the importation of timber--increased dramatically in the years after the turn of the century. Milling oak, and how it led to forest loss (see Map One).

---

20 David A. Clary, Timber and the Forest Service (Lawrence: University Press of Kansas, 1986), 17. Clary provides an example from 1890 of a federal forester, Carl Schenck, arguing that deforestation in the United States would not be halted until timber resources became too scarce and valuable to waste.

21 Charles C. Deam, Trees of Indiana (Fort Wayne, IN: Fort Wayne Printing Co., 1921), s.v.
operations of substantial size (roughly those marketing over $50,000 dollars of product annually) had begun importing timber by the end of the century and by 1905 in-state supplies were nearly exhausted. To offset the loss of in-state hardwoods, timbermen began importing logs from the South and the West.\(^{22}\) When the amount of land cut-over and cleared for agriculture, the percentage of less valuable trees in Indiana's forests, and the amount of timber drawn from other states, are considered, the deforestation of Indiana is apparent.

The formation of the Indiana State Board of Forestry (1901-1917) and its increasing concern with deforestation demonstrates the recognition of the problem among industrialists in the state. To address the exploitation of forests effectively, the Board of Forestry had to rally the support of the timbermen who made up its natural constituency. Without such backing the agency would have lost its already limited political power. Charles Deam's pro bono efforts to evaluate private lands for their potential as forestland is an example of the Board of Forestry implicitly acknowledging the threat of deforestation by providing incentives to private citizens willing to conserve forest resources.\(^{23}\) As State Forester, Deam considered the management of private woodlands as the best way to avert a "timber famine" in Indiana.\(^{24}\)

---

\(^{22}\)Clark, *Entrepreneurs in Hardwood*, 67.

\(^{23}\)Lands classified with the state as forestland were eligible for reduced assessment for tax purposes. This response to timber loss is discussed in detail in chapter three.

\(^{24}\)Deam carried on the fight for management of private woodlots throughout his career, but the best example of his argument is in Charles C. Deam to William L. Jennings, May 28, 1924, in Box 1, Folder 13, Jennings Papers, IHS. In this letter Deam outlines the benefits the landowner will receive in terms of increased resource availability and breaks on state taxes. For evidence of the Board of Forestry's belief that Indiana's forests were in a truly dire condition see Board of Forestry, *Bulletin Number 2*, 11. This information is from a survey the Board of Forestry published in the bulletin denoting 1,084,586 acres of timber as marketable out of an original of 18,993,040 acres of "unexcelled" forest in Indiana.
anecdotal evidence concur that Indiana lost a significant amount of forestland during the last half of the nineteenth century.

The few obdurate individuals who opposed any response to forest loss provide an indication of the challenge Indiana had to overcome. A minority of people in the state continued to consider the clearing of forests a benefit to civilization. While this attitude prevailed in the first half of the nineteenth century, the majority of Indiana and the nation abandoned it as deforestation became obviously undesirable by the end of the century.²⁵ A small cadre of people in the state continued to argue against the need for any type of conservation, but not many. The most common rationale for opposing conservation was the belief that deforestation was a sign of progress because it represented the replacement of wilderness with civilization.²⁶

Some individuals considered deforestation a necessary evil of society and approached it with fatalistic resignation. When asked to join the Indiana Forestry Association (IFA) by Charles Warren Fairbanks, the former vice-president and founder of the IFA, Robert Furnas of Indianapolis replied, "I have always believed it to be useless to lock the gate after the horse is stolen. I most respectfully decline your kind offer to join

²⁵ For discussion of the public opinion on forest loss see Roderick Nash, Wilderness in the American Mind (1983).
²⁶ The limited support for the idea that deforestation was not occurring is apparent in the lack of sources that present the view. Some state legislators believing that Indiana did not need to address forest loss introduced a bill to eliminate state forestry and entomology work several times in the early-twentieth century, but never received enough backing to force a vote on the issue. See Charles C. Deam to Charles W. Fairbanks, February 5, 1913, in Box 17, Folder 1 (January-June 1913), Charles Warren Fairbanks Papers, Coll. No. M100, IHS. (Hereafter cited as Fairbanks papers.). Newspapers, published scientific proceedings, and collections of correspondence present few individuals who failed to recognized deforestation by the early-twentieth century. The idea that forest clearing advanced civilization was also a minority view by the late-nineteenth century. Correspondence in the Hoffman Brothers mss., Lilly Library, Indiana University, Bloomington, promote harvest as an implicit good. The company's arguments for efficient use of timber were based on economic rather reasons.
the Conservation movement." He considered forest conservation a pointless endeavor beyond social control. Furnas accepted, although disliked, the destruction of central Indiana's timber resources as a result of progress. His portrayal of the industry demonstrates the success of timbermen in removing forests from central Indiana.

For those concerned with studying or remediying deforestation, the percentages of wasteland, virgin timber, reforested land, and parks or reserves in the state dominated debates. The Board of Forestry analyzed the amount of land in each of these categories and worked to establish what it considered a proper relationship between types of land. The United States Forest Service (USFS) entered this debate in Indiana in 1915, classifying 6 million of the state's 22,266,560 acres as wasteland. An Indiana timberman argued this figure in a letter to Charles Deam, because he believed "such down right lies" would ruin the image of the state as a timber producer. The man did not believe wasteland did not exist, merely that the USFS had misrepresented the proportion of unproductive land in the state. The establishment of the first state park in 1916 marked the initial state-sponsored preservation of land from timber harvest in Indiana. The Board of Forestry considered its reserve forest, established in Clark County in 1902, as a 2,000 acre answer to deforestation. Managed by professional foresters, it was intended to determine the most efficient methods of producing timber.

---

27 Robert W. Furnas to E. J. Hancock, January 12, 1911, in the Fairbanks papers, Box 16, Folder 6 (January 1911), IHS.
28 Maps in Clark, Entrepreneurs in Hardwood, 49 and 103, demonstrate the shift in areas of intensive harvest.
29 For contextual clarification of the term "wasteland" see: Board of Forestry, Bulletin Number 1 (1901), 17; Board of Forestry, Bulletin Number 2 (1902), 19; and Board of Forestry, Bulletin Number 5 (1905), 27.
30 Board of Forestry, Bulletin Number 7 (1907), 144. This report discusses the status and goals of work at the reserve forest. No record of individual employees at the forest reserve exists, but annual reports of the Board of Forestry and the Department of Forestry do periodically request funds to hire additional help or to grant raises to active employees.
Whether to preserve land as virgin timber, or reforest wastelands, held a prominent position in debates on the question of deforestation in Indiana. A researcher in the 1960s determined that by 1899 only 1.5 million acres of virgin timber remained from the approximately 19 million original acres of such forests in the state. Even the most casual observers could not overlook this transformation of the state's woodlands. 

Foresters and others wishing to maintain a viable timber industry in Indiana attempted to offset the shock of this deforestation with vigorous reforestation campaigns and publicity efforts. To inform the public of the ability of reforested land to meet all demands for forest products, the Board of Forestry issued press releases to local newspapers. In 1901, the Indianapolis Sentinel reported the planting of 4,100 acres in the Kankakee River area in northeastern Indiana, under the direction of W. H. Freeman, State Forester, to meet the needs of harvesters in fifty years. Foresters considered public support necessary to successful land management programs in the state and devoted significant efforts to ingratiating themselves with newspapers and conservationists.

The Board of Forestry pursued reforestation to enhance its image with the general public and to create resources for long-term timber harvest. The Board of Forestry's annual bulletins reveal this less public activity. The Board of Forestry did publish bulletins, but distributed them to those very few people requesting copies or associated with its work. A nursery on the reserve forest allowed this state agency to produce stock for reforestation. In the first year of the nursery, 1905, foresters planted it with approximately 200,000 seeds and seedlings, with little public notice. Because of the

32Detailed analyses of the responses to environmental change follow in chapter three.
33"Big Forest to be Planted," Indianapolis Sentinel, August 25, 1901, p. 8. The article relays information supplied by Freeman and identifies the planting as the first forest planted in Indiana under the supervision of the Board of Forestry and intended to supply a future harvest for the landowners, a group of Chicago businessmen.
34Board of Forestry, Bulletin Number 5 (1905), 29. No record of this action is available other than the official report.
conflicts among foresters and advocates of parks, the issue of virgin timber versus reforested land posed a major question as woodlands declined throughout Indiana.

Timber harvest also created lasting and significant changes in the state's woodlands. Timbermen considered forests a commodity to be collected and profited from, with no need of protection, at least until the dawn of the twentieth century. Facing seriously depleted resources throughout the nation and in Indiana, timbermen had the option of reform or relocation. Those Indiana timbermen accepting the former alternative remained in the state, those who found the latter more attractive sought out new resources in the South and the West, emerging timber regions in the last decade of the nineteenth century. Industrial forest-use removed trees from many areas of the state that had escaped agricultural clearing. Commercial harvest concentrated on the most profitable species and prime specimens, leading to the removal of superior (in economic terms) species. This transformation became obvious by the early-twentieth century and a vigorous movement to conserve the state's forests sprang up in response.
Chapter Three:

Responses to Forest Loss in Indiana

"[O]ur forefathers piled vast piles of walnut and other native timbers together and burned them in order that they might put the land to the 'God' intended purpose of aiding and abetting . . . the upright walking animals on this cold and uncharitable earth and why, under high heaven, . . . the state should degenerate to such an extent that they should . . . undo the great work of clearing up old Indiana is beyond our comprehension."¹

"[W]e believe that beautiful trees have a spiritual and poetic value greater than their material worth."² Nature Study Club of Indiana, 1919.

During the last twenty years of the nineteenth century and into the first two decades of the twentieth century, forest loss became increasingly severe throughout Indiana, prompting more visible responses among all segments of the public. One defining characteristic of the response to forest loss was the wide range of strategies and goals proposed by concerned individuals; however, in order to hold a focus, this study concentrates on natural scientists, farmers, members of the timber industry, and foresters--groups that generally supported wise-use management as a goal. The practice of wise use can be traced back at least to Secretary of the Interior, Carl Schurz in the 1870s. His

¹John Mock to Charles C. Deam, May 4, 1913, Box 2, Folder 4 (1913), Charles C. Deam Papers, Indiana Division, Indiana State Library, Indianapolis. (Hereafter cited as Deam papers, IN Division.).

²"NSC Minutes, 1913-1923," 195, in Nature Study Club of Indiana Records, Coll. No. L-227, Indiana Division, IN Division. Proclaimed after the club hiked in Turkey Run State Park, June 21, 1919. (Hereafter cited as NSC records.).
policies of reducing illegal and inefficient use of federal timber exemplify the doctrine.\textsuperscript{3} In the last decade of the nineteenth century and in the early-twentieth century, Gifford Pinchot popularized the idea of managing resources for long-term yields and defined it as practical forestry.\textsuperscript{4} The term "wise use" entered the common lexicon in the early 1960s after Samuel P. Hays published his path-breaking study of the Progressive-Era conservation movement.\textsuperscript{5} The central issue of this type of resource management is the use of resources to produce the greatest possible profit for the longest possible time. To practitioners of wise-use conservation, preserving forests from harvest is a waste of equal proportion to destroying the forest with a fire. In Indiana, wise-use proponents dominated the conservation movement, but advocates of preservation did achieve some victories with the purchase of state parks and the gradual shift in public opinion toward a less utilitarian view of nature by 1920.

The wise-use management of forests in Indiana from 1890 to 1920 occurred as an outgrowth of the national rise of Progressivism. By attempting to reduce waste in harvest and production wise-use advocates reflected the Progressive drive to eliminate inefficiency in industry, government, and public services. Progressive reformers also considered scientific methodology applied by educated professionals the answer to all problems facing society. These reformers considered professionalization of city government, medicine, and the management of industry as the most effective means of reducing problems and rationalizing production. When applied to the timber industry, these reforms revealed

\textsuperscript{3}For information on Carl Schurz as Secretary of the Interior, see: Richard G. Lillard, \textit{The Great Forest} (New York: Dall Capo Press, 1973), 171-173.
\textsuperscript{4}Gifford Pinchot, \textit{Breaking New Ground} (New York: Harcourt, Brace, & Company, 1947), 50, 121. Pinchot published this book at the end of his career as a state politician in Pennsylvania after he had been deposed from national politics by President Taft.
themselves in a desire to increase the role of college-educated foresters and in the attempt to reduce waste through the adoption of more efficient practices and machinery.

Federal withdrawal of forests exposed the most significant difference between conservation at the national level and within Indiana. By 1909, the federal government had set aside 151 million acres as forest reserves, almost exclusively in the West. Not until the Weeks Act of 1911 and the Clarke-McNary Act of 1924 did the federal government attempt to reserve woodlands in the more populous East. With no large areas of unsettled land remaining in Indiana, the state could not create similar holdings. When Indiana purchased forests, other than the one reserve forest and experiment station (created in 1902), the lands were intended as parks. Federal forest reserves were created for utilitarian concerns while a system of parks withdrew land for non-exploitative uses. Conservationists at both the national and the state level responded to a fear that existing rates and methods of use would lead to a "timber famine."

Because Indiana lacked unclaimed public domain or significant federal lands in the early-twentieth century, the state undertook a program of woodlot management out of necessity. Neither the Weeks Act or the Clarke-McNary Act established a significant federal presence in Indiana, the federal government did not undertake the management of any forestland in Indiana until the second half of the twentieth century. Conservationists

---

9 The Hoosier National Forest in southern Indiana was established in 1951.
in Indiana were unable to obtain sufficient state funds to outbid timber buyers and had few old-growth stands to consider. As a result, managing cut-over lands and woodlots became the primary means of saving state woodlands.

Indiana also had few large timber operations, removing a source of funding for conservation. At the national level, George W. Vanderbilt employed Gifford Pinchot in 1892 to establish the first significant wise-use, forest-management project in the nation. Without investment by large timber corporations, producers in Indiana were generally unable to employ scientifically trained foresters. Pinchot argued that big business could use low-quality logs more efficiently and force conservation by eliminating unnecessary competition. Unable to affect prices in a national market, Indiana timbermen were forced to retain wasteful practices to achieve the most rapid production possible. The industry in Indiana did organize in an attempt to simulate the benefits of large producers, but with little success.

Science evolved during the second half of the nineteenth century as scientists began to replace taxonomic research with serious studies of resource depletion. By about 1880, scientists had largely abandoned their belief that natural resources in the United States were inexhaustible and began to search for means of managing remaining species of plants and animals. As the field of natural science shifted from identification to

---

11 Private industry in Indiana did not begin to employ foresters in significant numbers until the late 1920s. Daniel Lee Clark, "The Indiana Hardwood Industry: A Study in Small Business Enterprise" (Ph.D. diss., Purdue University, West Lafayette, IN, 1986), 400.
13 For examples of organizational efforts by Indiana timbermen see: Daniel Lee Clark, Entrepreneurs in Hardwood: A Study of Small Business Strategies (Indianapolis: White Arts, Inc., 1987), 158-159; and Bramble Forestry and Conservation in Indiana, (Lafayette, IN: Purdue University, Department of Forestry and Conservation, 1965), 7-11.
management strategies, individual scientists in Indiana reflected this trend in their research on forests in the early-twentieth century.

In Indiana, identification and study of individual species dominated natural science until the 1890s, slightly longer than at the national level. Two articles in *The Auk*, an ornithological journal, in 1889, reveal the taxonomic character of science in Indiana. One article documents avian species in Carroll County, Indiana, the other discusses specimens collected in the Lake Michigan dunes (see Map One). Neither considers human impacts on populations of birds and both recommend collecting specimens of rare birds. ¹⁴ The Indiana Academy of Science demonstrates the concern with identification. In a list of all the botanical studies of Indiana that they had access to in 1893 the vast majority analyzed specific plants. ¹⁵ This list reveals the youth of modern botany in Indiana and its concentration on individual organisms and species at the expense of what later generations would call ecosystems. Botanical research in the state could not consider such relationships until it identified and analyzed the constituent parts of plant communities. With faith in the inherent goodness of progress, scientists of the nineteenth century did not oppose industry until deforestation became an inescapable fact of life.

Scientists who became leading conservationists in Indiana reflected the development of general scientific study. Charles C. Deam serves as a representation of this transformation. Before he became State Forester in 1908, Deam obtained national renown as a taxonomic botanist, sending and receiving specimens from all over the nation for identification. ¹⁶ As State Forester, he began to abandon this approach after his first

¹⁶Box 1 (1896-1909), Folders 1 (1896-1899), 6 (1905), and 7 (1906), Deam papers, IN Division, contain his correspondence with botanists in the United States Army, universities, and federal arboretums on the subject of specimen identification. Several of
year in favor of the more complex methodology of forestry, although he did continue to work as a botanist as well. As a scientist, he experienced the shift that occurred within the field by applying his scientific training to the effort of halting resource depletion.

Stanley Coulter represented the support of wise-use ideas among scientists in Indiana. He introduced forestry classes at Purdue in 1903 and made it an official course of study in 1912 and represented Purdue on the Board of Forestry and its successor institution, the Division of Forestry, for thirty-two consecutive years. A scientist and academician, Coulter considered resources in terms of sustainable production, and attempted to use his expertise to shape Indiana's forests into a source of improved and abundant timber. Many of Coulter's colleagues supported the management of forests for harvest. Two prominent scientists argued, woodlots "should contain the number of trees consistent with the most rapid development of the best timber. In no case should there be any worthless species"--a clear statement that proper management could create a sustainable forest. This belief in the ability of science to restructure nature for the greatest production was mirrored in similar studies of wildlife, water and air quality, pollution, and other environmental concerns. As the majority until the late-1910s, wise-use proponents directed most scientific research and writing.

17 Charles C. Deam to Charles F. Millspaugh, November 11, 1909, Box 1, Folder 11 (1909), Deam papers, IN Division.
20 For examples of wise use in other scientific fields, see: Willis S. Blatchely, "Wild or Prickly Lettuce," in Box 1, Folder 3, Willis S. Blatchely mss., Lilly Library, Indiana University, Bloomington (hereafter cited as Blatchely mss., Lilly); also Howard H. Michaud, "History of the Early Development of Game Regulations in Indiana," Proceedings of the Indiana Academy of Science (1957): 256-259.
Ecology had little impact on forest management in Indiana before 1920, but its rapid rise in the following years was based on the scientific developments of the late-nineteenth and early-twentieth centuries and requires a brief mention. In the last third of the nineteenth century, scientists such as Henry Chandler Cowles and Frederic Clements began to consider the relationships between resources as deserving of attention. Cowles studied the flora of the Lake Michigan Dunes in 1899 and believed common natural occurrences could alter climax ecosystems (most climax ecosystems in Indiana were defined by their tree species). Clements worked in Nebraska from 1897 to 1905 and argued that only humans or catastrophes could disrupt ecosystems.\textsuperscript{21} In Indiana, Willis S. Blatchely, State Geologist and member of the Indiana Academy of Science, made a plea to save forests by protecting woodpeckers, a reflection of an incipient ecological outlook. He argued woodpeckers removed timber-destroying insects and led to an increase in timber-industry profits.\textsuperscript{22} This reasoning reveals a basic ecological understanding, although likely not recognized by the author.

Farmers considered nature a storehouse of commodities, yet contributed significantly to conservation. In the last quarter of the nineteenth century, farmers abandoned the widespread clearing of land, but undertook conservation only when practical. Conservationists reinforced farmers' wise-use ideals in order to protect the large


\textsuperscript{22}Willis S. Blatchely, "Protect the Woodpeckers," October 27, 1895, in Box 1, Folder 3, Blatchely mss., Lilly. The presentation of this view by Blatchely is particularly interesting as he had contact with Dean, Coulter, and others at the forefront of state forest management.
percentage of woodland in agricultural holdings. Throughout the nation farmers owned over 3.37 million acres of forest land in 1910. Seven years later, in 1917, The Board of Forestry noted the existence of only 3 million total acres of forest in Indiana. Although the two estimates may reveal differences in methods of accounting, farmers did own a significant portion of Indiana's forests. Some farmers eschewed wise use and became preservationists devoted to the qualities of beauty rather than economics in forests.

Farmers responded to the deforestation of Indiana, which they had actively advanced in the nineteenth century, by creating profitable and long-lasting forests. By the early-twentieth century, use of forest products for repair and construction of farm buildings and fences, as well as for fuel and sale to timbermen, allowed farmers to justify maintaining woodlots on cultivable ground throughout the United States.

26 The Indianapolis News, occasionally reprinted speeches presented to farmers' groups, for example, see: John P. Brown, "Preserving the Forests," January 20, 1899, p. 6; and Samuel J. Record, "Forestry for the Farmer: The Problem in Indiana," September 28, 1907, p. 16, both in the News. Record was a forestry instructor and dean at Yale from Indiana. For Brown's role in conservation (a crusade he undertook after abandoning his farm in favor of work as an editor), see: DenUyl, "History of Forest Conservation in Indiana," Proceedings of the Indiana Academy of Science, 66 (1956): 262. For another example of Brown's approach to conservation, see: John P. Brown to Charles Warren Fairbanks, October 24, 1910, in Box 16, Folder 3, Charles Warren Fairbanks Papers, Coll. No. M-100, Indiana Historical Society, Indianapolis. (Hereafter cited as Fairbanks papers, IHS.).
agricultural land. Farmers responded to deforestation by reducing cultivation and pasturage (these two uses generally define the census category of improved land). As more farmland received the classification of unimproved, forests gained a more prominent position among farm products.

Another method of determining the importance of farmers to the conservation movement is to study the effort other conservationists exerted to convince farmers to maintain woodlots. People outside the agricultural community considered farmers the front line in the attempt to save trees. A contributor to the Indiana Academy of Science commented that in the "hands [of farmers] must rest the burden of real and enduring conservation." Farmers had the ability to direct the use of large amounts of land to reforest, manage for production, or clear for crops or pasture. The Department of Conservation also worked with farmers to achieve a sustainable timber industry while respecting the state's commitment to privately owned land. The Division of Forestry carried the slogan, "[l]et your idle acres work" and used the reserve forest in Clark County to demonstrate the benefits woodlots posed for farmers (see Map One).

---


29On the response of farmers to deforestation see: Howard L. Nicholson, "Swine, Timber, and Tourism: The Evolution of an Appalachian Community in the Middle West" (Ph.D. diss., Miami University, Oxford, OH, 1992), 120-135. For an example of a farmer who actively implored others to save woodlots, see: J. B. Conner to Charles Warren Fairbanks, December 7, 1910, in Box 16 Folder 4, Fairbanks papers, IHS.


31"Report of the Director to the Commission," Annual Report, Fiscal Year 1920-21, (unpublished), Box 2043, Department of Conservation Records, Indiana State Archives, Indianapolis. (Hereafter cited as Dept. records, Archives.). The reserve forest was a 2,000-acre tract purchased in 1902 for the Board of Forestry to develop as an experiment station for forest management techniques and as a demonstration plot to further scientific forestry among timber users and landowners in the state.
responded positively to these conservationists and governmental agents, basically discontinuing large-scale clearing by the turn of the century.

A vocal minority of farmers went to great lengths to promote complete preservation of forests. Two individuals demonstrate the extreme stance taken by some farmers on behalf of woodland preservation. Rich Critchfield sought to provide for the protection of his lands after his death and John P. Brown attempted to influence others to save their woodlots from further degradation.

At the end of the first quarter of the twentieth century, Rich Critchfield offered to will his land to the Division of Forestry expressly to preserve it from harvest.\(^{32}\) Apparently ignorant of the activities of the Division of Forestry, Critchfield attempted to retain the undisturbed quality of his woodland by donating it to an organization that managed forests for industrial profits. No further correspondence occurred and no subsequent land acquisition fits the description and location of this parcel.\(^{33}\) Critchfield likely made other arrangements to pass his land on after obtaining more information on the Division of Forestry's activities.

John P. Brown of Connersville, Indiana, assumed the position of spokesman for preservationist farmers. He abandoned the actual practice of agriculture to edit the journal, *Arboriculture*, for eight years on a pro bono basis and reportedly suffered economic losses in the thousands of dollars. Then he became a civil engineer and activist in the American Horticultural Association. In 1910, one year after Charles Warren Fairbanks began the Indiana Forestry Association (IFA), Brown warned him that despite his own efforts during the previous fifteen years the state had only begun to grant tenuous support to conservation after 1907.\(^{34}\) Men such as Critchfield and Brown were important

---

\(^{32}\)Rich Critchfield to R. F. Wilcox (Acting State Forester), July 18, 1925, A-F Forestry Correspondence Inspection Letters, Box 2043, Dept. records, Archives.  

\(^{33}\)Annual reports of the Division of Forestry and contemporary newspaper articles do not mention state acquisition of any land that could logically be the Critchfield parcel.  

\(^{34}\)John P. Brown to Charles Warren Fairbanks, October 24, 1910, Box 16, Folder 3, in
advocates for the preservation of farm woodlots, but they did not speak out until they abandoned the practice of agriculture. Through newspapers and lectures, Critchfield, Brown, and others popularized the idea of farmers as preservationists.

The Indiana timber industry split into three categories as defined by responses to the deforestation of the late-nineteenth and early-twentieth centuries. One group, which believed forests could provide unlimited natural resources, left Indiana, but affected the state by the image of exploitation they created for the industry. A second minority group remained in the state and opposed all conservation efforts. The majority of timbermen, however, recognized the threat deforestation posed to their livelihood and actively promoted conservation to offset resource loss. Timbermen, as proponents of wise-use conservation, became effective conservators of Indiana's forests by the early-twentieth century.

The migratory character of the timber industry was a major factor in the deforestation of Indiana and the nation. The national timber industry moved from the Northeast, to the Great Lakes region, and finally to the South and West, denuding forests in each region. Railroads and steam engines created and opened massive demands and markets and greatly increased productivity. Mobile timbering operations during the nineteenth and twentieth centuries left behind devastated forests, massive wildfires,

Fairbanks papers, IHS. The letter briefly outlines Brown's activities in conservation. I found no support for his claim of an increase in state conservation after 1907.

35 For analysis of the beliefs of Indiana timbermen who considered the nation's forests inexhaustible, see: Nicholson, "Swine, Timber, and Tourism," 105, 113, and 120; also Clark, "The Indiana Hardwood Industry," 146-148.

36 The best example of this group is the Hoosier Veneer Company, infra.

37 For statistical treatment of the out-migration of milling operations from Indiana at the end of the nineteenth century, see: Clark, Entrepreneurs in Hardwood, cf 49 and 103. For more detailed information, see: Nicholson, "Swine, Timber, and Tourism," 112-114. The efforts of E. A. Swain, president of the Indiana Hardwood Lumbermen's Association, demonstrate the active support timbermen offered conservationists, see: Charles Warren Fairbanks to E. A. Swain, November 25, 1910, Box 1, Folder 1, Indiana Forestry Association (IFA) mss., Lilly. (Hereafter cited as IFA mss.)
depressed economies, and ultimately strengthened conservation movements.\textsuperscript{38} For timbermen who believed the nation's forests could sustain a highly productive and wasteful industry, new areas for harvest were opened until the 1940s.

A minority of Indiana's timbermen considered threats to forests insignificant and opposed conservation. In his drive to establish Turkey Run State Park, Richard Lieber received large donations from timbermen as well as their agreement to not bid on the land. The Hoosier Veneer Company, however, recognized no need to create state parks and outbid Lieber's available funds. The Hoosier Veneer Company proceeded to harvest a portion of the prime timber then sold the tract to the state. This company continued to oppose conservation efforts; three years after the formation of Turkey Run State Park they logged off old growth in the area, much of which Lieber was attempting to annex to the park.\textsuperscript{39} This behavior and that of timbermen who removed entire forests then left the state, aligned public sentiment against harvest. Even supporters of the industry opposed this exploitation. Charles Deam argued that without a more conservation-based approach to harvest, Indiana's timbermen would remove all of the state's harvestable timber by the end of the twentieth century.\textsuperscript{40} The limited number of timbermen ignorant of, or opposed to, conservation attracted the attention of people concerned with deforestation to the industry rather than the variety of threats to the state's forests.

The majority of timbermen responded to deforestation by working to maintain sustained-yield forests. The key word in this response was "yield." The timber industry desired the existence of woodlands but had no use for areas preserved from harvest. To


\textsuperscript{39}Frederick, "Richard Lieber, Conservationist and Park Builder," 123-126 and 199.

\textsuperscript{40}Charles C. Deam, "Press Bulletin, No. 12, editorial" (October 26, 1910) in Box 16, Folder 3, Fairbanks papers, IHS.
supply the necessary resources, timbermen allied with conservationists and foresters and created their own organizations for conservation.

Timbermen worked with other conservationists in several capacities, usually as advisors or representatives of the industry's needs. As advisors, timbermen detailed the efforts of the industry to maintain healthy forests and suggested ways other groups could supplement these actions. Benjamin Douglas, a Trevlac, Indiana, lumberman, spoke to the Nature Study Club of Indiana (NSC) on the topic of forestry in 1908. He emphasized the cooperative actions of farmers and timbermen to restore cut-over agricultural lands to productive forests. Douglas demonstrated the degree to which timbermen found joint actions profitable, they worked with farmers and conservationists to create sustained-yield forests.

The IFA, established in 1909, provided a forum for timbermen to work with individuals and groups sympathetic to industrial forestry. Primarily an organization of well-off professional males, the IFA did include some farmers, women, and poor people. D. N. Foster, a forest-products manufacturer in Fort Wayne, represented the IFA in that city and demonstrated the desire of the forest industry to become involved in conservation. Timbermen, in collaboration with other conservationists, led most industrial efforts to maintain resources. As speakers, advisors, and representatives of the timber industry, IFA members portrayed harvest as non-destructive and sought public support for the harvest of forests.

41 The NSC, organized to study and appreciate nature in Indiana is discussed below. May 16, 1908 entry, "First Secretary's Book" (1908), in Box 1, Folder "First Secretary's Book" (1908), NSC records, IN Division.
42 Box 16, Folders 3-6 (September 12, 1910-January 1911), in Fairbanks papers, IHS, contain correspondence relating to requests for membership.
43 Charles Warren Fairbanks to D. N. Foster, November 30, 1910, in Box 16, Folder 4, Fairbanks papers, IHS.
Timbermen heeded the recommendations of state and university foresters to conserve trees for future use.\textsuperscript{44} Foresters operated independently but did receive significant assistance from timbermen. The relationship between timbermen and foresters remained important throughout the nation. The National Conservation Commission determined that conservation of forests in the United States could only occur if private enterprise cooperated with state and federal agencies.\textsuperscript{45} Timbermen also assisted foresters by observing recommended methods of harvest. The Board of Forestry lauded timbermen for following prescribed methods of selective harvest in 1901.\textsuperscript{46} These strategies provided foresters a means to maintain and revive forests, as timbermen implemented less destructive methods of harvest. Altered logging practices designed for a sustained yield typified timbermen's efforts to work with foresters for conservation.

Timbermen in Indiana directed their own future by forming associations to further conservation and protect their public image. The Indiana Retail Lumber Dealers' Association incorporated to reduce destructive competition and became one of the most

\textsuperscript{44}In the early twentieth century, representatives of the forestry programs at Purdue University and Wabash College assisted state employed foresters in advancing the profession among timbermen. See: Samuel J. Record, "Indiana Has Contributed a Large Part of the Great Force of Trained Men Who are Making a Survey of the Timber Supply of the United States," \textit{Indianapolis News}, November 11, 1911, p. 15. Record is an excellent example of an Indiana man who became a nationally prominent forester. After studying at Wabash College as an undergraduate he eventually became the Dean of the School of Forestry at Yale. For a study of the importance of university and state foresters to the industry and conservation, see: DenUyl, "History of Forest Conservation in Indiana," \textit{Proceedings of the Indiana Academy of Science}, 66 (1956): 262-264 and 267.\textsuperscript{45}Henry Gannett, ed., \textit{Report of the National Conservation Commission, February 1909} v. I, Senate Documents, v. X, Doc. No. 676, 60th Congress, 2nd Session, December 7, 1908, March 4, 1909 (Washington, D.C.: Government Printing Office, 1909), reprint (New York: Arno Press, A New York Times Company, 1972), 20. The National Conservation Commission originated with President Theodore Roosevelt's desire to create a detailed inventory of the nation's resources. The commission was basically composed of governors and conservation and industry representatives from across the nation. After determining the nation's past and extant resources, the commission analyzed usage and recommended future conservation measures.\textsuperscript{46}Board of Forestry, \textit{Bulletin Number 1} (1901), 21-22.
visible timbermen's groups. Its members believed competition drove prices below a level at which the additional labor costs necessitated by cautious harvest could not be met and the only option that remained was to liquidate prime timber rapidly. Cooperative actions of producers and consumers abetted the creation of a more conservation-friendly public opinion in Indiana. Mergers of companies in similar facets of the industry allowed more efficient operation and persuaded large customers (e.g., railroads) to patronize the new corporations. By rationalizing production and management, the industry hoped to ensure long-term profits.47

Nationally, several timbermen's groups formed to retain forests for future harvest. Wholesale and retail dealers of lumber became the most prominent timbermen to organize and promote conservation. The effort to create eastern forest reserves, which culminated in the Weeks Act of 1911, demonstrated the actions of these groups. In the first decade of the century, retailers and wholesalers backed proposals to reserve forestland in the East similar to national forests in the West.48 With significant investment in a location-based aspect of the industry, lumber dealers had ample rationale to work for a stabilized supply of forest products.

State and national timber industries differed in their support for reservation of timberlands. Indiana's timbermen supported the idea, but placed more faith in increased efficiency of use. The Indiana Hardwood Lumbermen's Association (IHLA) advocated a different set of lumber grading rules from its national counterpart (NHLA). The IHLA version benefited small mills with access to less valuable timber. The NHLA standards

demanded larger boards and more clear surface areas, obtainable with only the most valuable timber. These requirements reflected available logs. By the early-twentieth century (when this rift developed) state supplies of prime timber were largely depleted but national producers could draw on resources in the West and the South. By regulating competition and promoting cooperation among suppliers and customers Indiana's timbermen sought to halt the uninhibited exploitation of forests.

Timbermen depended on foresters for validation of their efforts, while foresters called on timbermen to implement management policies. By developing this relationship the two groups established a successful wise-use conservation movement designed to perpetuate the industry. Foresters also carried out governmental conservation policies and cultivated public support for wise-use in the early-twentieth century. In the first decade of the century, about ten years after forestry emerged nationally, Indiana began employing foresters and Purdue University and Wabash College initiated forestry programs. State and university foresters applied their scientific training to existing conservation sentiment through fieldwork and publicity to help direct the movement toward the management for harvest in the first two decades of the twentieth century.

49 Clark, "The Indiana Hardwood Industry," 294-299.
50 Purdue began an agricultural extension program in 1912, including woodlot management. Forestry courses were first offered at Purdue in 1903 and became a distinct course of study in 1914. Phillips, Indiana in Transition, 145-147. Wabash College did not create a formal forestry program, but Mason B. Thomas a well-respected botany professor matriculated approximately one student per year into a forestry graduate study program, the majority of these students went to Cornell. See: James Isley Osborne and Theodore Gregory Gronert, Wabash College: The First Hundred Years, 1832-1932 (Crawfordsville, IN: R. E. Banta, 1932), 194, and 240.
51 On the positive newspaper treatment of forestry actions, see: "Report of the Division of Forestry, February, 1920," 5, in The Report of the Department of Conservation, State of Indiana, 1920, Box R2138, Dept. records, Archives. For a representation of the foresters' belief that timber was an industrial resource, see the subtitle to the second annual bulletin of the Indiana State Board of Forestry: "Concerning the Relation of Forestry to Factory, Railroad and Mine," in Bulletin Number 2, 1.
Foresters from the Board of Forestry, Purdue, and Wabash carried out the most noticeable activities in the state. Purdue and Wabash, headed by Stanley C. Coulter and Mason B. Thomas respectively, indoctrinated their graduates in wise-use management. These foresters used lectures, press releases, and personal meetings with landowners, to promote scientific management, tax relief, fire protection, and timber-industry reform, to benefit industrial producers. The management of forests in Indiana demanded that foresters use these indirect methods to work with existing land ownership patterns rather than create woodlands for scientific management by legislative decree or executive orders as the federal government did throughout the West. Forestry in Indiana owed much of its early development to Charles C. Deam, State Forester and botanist, and Coulter, Dean of the School of Science at Purdue. Deam worked to promote scientific forestry through a three pronged policy. He attempted to eliminate fire and grazing from forests while replacing non-marketable trees with more profitable species.

53Discussions of forestry throughout this study refer to state employed foresters and the instructors and students of Purdue and Wabash. Foresters did not enter private employment to any notable degree in Indiana until the late 1920s. Clark, "The Indiana Hardwood Industry," 400.
54For comments on the emergence of forestry and the importance of Deam and Coulter to the profession's development see: Bramble and Miller, "Forestry," 551-553; Daniel DenUyl, "History of Forest Conservation in Indiana,"264-267; and Clark, Entrepreneurs in Hardwood, 158.
55Extensive forestry work began at the Clark County forest reserve (established in 1902) in 1904. Throughout the first two decades of its existence areas of the reserve were used to experiment with new forest management strategies, as a nursery for seedlings, and to supply crops (both agricultural and timber) for use and sale by the Board of Forestry. Additional forest reserves were not created until the late-1920s. Board of Forestry, Bulletin Number 2 (1902); Board of Forestry, Bulletin Number 3 (1903); and Board of Forestry, Bulletin Number 4 (1904).
Coulter established Purdue as one of the most renowned forestry centers in the Midwest and promoted scientific forestry as an academic discipline. Until the federal government established a research division for forestry in 1915, Purdue conducted the majority of forestry research in the Midwest. Forest management in the region benefited significantly from Coulter's efforts. When the United States Forest Service (USFS) conducted a study of forest resources in the nation in the early-twentieth century, foresters trained by Coulter and Thomas, his counterpart at Wabash, contributed significantly to the project.

Deam worked with private landowners, personally inspecting forests for acceptance into the state program of tax relief and encouraging owners to discontinue woodland grazing. By eliminating the pasturing of sheep, cattle, and swine in woodlots Deam hoped to aid the natural regeneration of forests. His efforts were crucial to getting 350 individuals to classify woodlots as forestland by 1927. This state program reduced the assessment of a landowner's woodland at one dollar per acre if the owner protected it from grazing and fire and maintained a minimum forest density. Although

58 Samuel J. Record, "Indiana Has Contributed a Large Part of the Great Force . . . ," _The Indianapolis News_, November 11, 1911, p. 15.
59 Cattle and sheep allowed to graze in forests trample and eat seedlings and damage saplings, leading to a forest unable to replace natural or human-caused tree loss. The phenomenon is well-documented in environmental history, for a concise treatment, although not an Indiana example, see: William Cronon, _Changes in the Land: Indians, Colonists, and the Ecology of New England_ (New York: Hill and Wang, 1983), 144-146.
60 R. F. Wilcox to Gabriel H. Abel, June 27, 1927, Box 44-C, Folder "A-F Forestry Correspondence, Inspection Letters," Dept. records, Archives.
61 A good example is Deam's letter to William Jennings, a Scott County farmer, in which Deam offers unsolicited advice on how to take advantage of this program (see Map One). Charles C. Deam to William L. Jennings, May 28, 1924, Box 1, Folder 13, Jennings Family Papers (1796-1945) Coll. No. 445, IHS.
unable to compel compliance with forest protection, Deam was able to reward cooperative landowners. Deam encouraged wise-use conservation among people with the ability to affect the management of existing forests. Through free advice to landowners on forestry and legislative fiat, Deam and the Board of Forestry promoted sustained-yield management in Indiana in the first two decades of the twentieth century.

Foresters also promoted wise use among concerned segments of the public. The Indiana Audubon Society engaged Deam to lecture on his specialty, trees in Indiana, but he capitalized on the opportunity to present "a rather rambling discussion of the whole flora of the state," and make "suggestions as to the proper course of activities to be followed by the Club [the Audubon Society] along the lines of serious study of plant life and conservation." Chosen for, and expected to address, his activities as State Forester and author of *Trees of Indiana* (1911), he instead covered the general need for forest conservation and instructed the society on how to carry out such broad measures. Deam also represented foresters with contributions to Indianapolis's major newspapers calling on Indianans to plant and protect trees as a resource. He recommended planting trees for aesthetic purposes in church- and school-yards but concentrated on harvestable forests. Foresters considered positive public opinion necessary for successful forest conservation in Indiana.

The Indiana state government responded to deforestation in three distinct ways. Most notable for wise-use conservation were the efforts of the Board of Forestry begun in 1901 and replaced by the Division of Forestry in 1918. The Indiana State Geologist also analyzed the state's extant resource base, with an emphasis on soils and minerals, which did contain information allowing conservationists to make quantitative assessments of

---

62 Board of Forestry, *Bulletin Number 4* (1904), 38, and 42.
63 J. E. Cook to C. Smith, February 6, 1921, Box 30, Folder 1, Clarence H. Smith (1875-1959) Papers (1680-1959), IHS. (Hereafter cited as Smith papers.)
64 [Charles Deam], "Suggests State Buy and Reforest Lands," *Indianapolis News*, January 31, 1911. This article provides an overview of Deam's concerns and suggested remedies.
timber in the state. State parks, owned and administered by the government, became
Indiana's most visible preservation effort. Indiana forest policy remained overwhelmingly
wise use and in favor of industry, but did address some preservationist concerns by the
late-1910s.65

Wise-use forestry became the most significant issue for foresters. Through
scientific studies, foresters determined the most productive species for each region in
Indiana and the level of harvest the area could sustain. Indiana followed national foresters
in this aspect. The USFS promoted sustained-yield forestry as its guiding principle. One
historian has written, "[f]rom the beginning it [the USFS] has perceived itself as fulfilling a
sacred mission to provide wood to the world in order to prevent the evils of a 'timber
famine."66 This view of the USFS's self image resembles that identified for foresters in
Indiana by E. C. Pegg and M. B. Thomas, the latter a botany and forestry professor at
Wabash College. They discuss the activities of state-employed foresters in promoting
sustained-yield management among farmers and through demonstrations at the reserve
forest in Clark County.67 Experiments in forest management at the reserve forest,
including plots of land used as nurseries for reforestation stock, were the state's most
definitive argument that scientific forestry offered significant profits.68 Support for wise

65For examples of early state surveys and geological reports see the annual bulletins of the
Indiana Department of Geology and Natural History. On the creation of state parks see:
Grieff, "Parks for the People;" and Frederick, "Richard Lieber, Conservationist and Park
Builder."

66David A. Clary, Timber and the Forest Service (Lawrence: University of Nebraska

Academy of Science, 19 (1909), 421.

68For examples of the forest reserve as a demonstration of profitable timber management
see the annual Bulletins of the Board of Forestry beginning with the third report (1903).
For analysis of nursery plantings on the reserve forest through 1919, see: the "Report of
the Division of Forestry (Being the Nineteenth Indiana Forestry Report)," [1919], in Box
2043, Dept. records, Archives; and the "Report of the Division of Forestry (Being the
Twentieth Indiana Forestry Report)," in the Second Annual Report of the Department of
Conservation of the State of Indiana: From October 1, 1919 to September 30, 1920, in
use permeated the publications of the Board of Forestry and, later, the Division of Forestry. By rationalizing harvest and reforestation, foresters intended to solve the problems of deforestation.

With tax-relief to farmers and other woodlot owners, Indiana foresters hoped to provide an incentive for private owners of timber to maintain their forests for long-term harvest. When forests were taxed equal to crops economics dictated rapid harvest. Croplands provided a relatively dependable annual return to offset taxes, but forests only produced timber for harvest once or twice in an owner's lifetime despite annual taxation. By addressing this disparity, foresters hoped to encourage landowners to manage forests as long-term resources. In its first annual bulletin, the Board of Forestry included a substantial account on the beneficial aspects of the [Indiana] Forest Reservation Act of 1899.69 The act was designed to provide a future timber supply and protect watersheds while supporting private ownership rights.70 Landowners who participated could receive an assessment of one dollar per acre on 12.5 percent of their land if they maintained a minimum forest density of 170 trees per acre and protected their woodland from fire and grazing.71 The [Indiana] Forest land Classification Act of 1921 revived the earlier bill by establishing legislation with similar purposes and methods. Providing tax relief to forest owners illustrated many of the efforts of state-employed foresters.

Tax-relief programs satisfied their participants and seemed to offer an acceptable solution to deforestation. Reviewing the success of the acts, R. F. Wilcox, the Acting State Forester, noted that prior to 1927, the year of his study, no participant had removed

Box 2043, Dept. records, Archives.
69 The [Indiana] Forest Reservation Act of 1899 was discontinued in 1905 when the state courts ruled it unconstitutional. William C. Bramble, Forestry and Conservation in Indiana, 11; and Phillips, Indiana in Transition, 214.
70 Indiana Classified Forests (Indiana Department of Conservation, Division of Forestry: Indianapolis, 1949), 2-4.
71 Board of Forestry, Bulletin Number 1 (1901), 35-36.
land from classification, despite the lack of penalty for withdrawal.\textsuperscript{72} The effort to make forest taxation more reflective of the resource it dealt with was a national concern among foresters, industrialists, and other wise-use conservationists.\textsuperscript{73}

Deam's efforts to protect woodlands from fire reflected a major concern of foresters at the turn of the century.\textsuperscript{74} The Board of Forestry had promoted fire prevention from its inception, supporting economic incentives for landowners who protected their forests from fire and grazing in its first bulletin (1901).\textsuperscript{75} After much of the forest reserve burned in May 1914, Deam convinced the Board of Forestry that more comprehensive fire fighting measures were necessary and he devoted the following two months to preparing for the prevention of similar losses in the future.\textsuperscript{76} Despite the actions of Deam and other foresters, Wilcox reviewed past forest policy in Indiana, in 1927, and named fire the most significant threat to forests, yet considered it preventable if landowners cooperated with foresters.\textsuperscript{77} Foresters worked to prevent fires in Indiana's privately held forests by attempting to protect the reserve to provide an example and by obtaining cooperation from landowners. Preventing wildfire was a demonstration of the Progressive disdain of waste. Foresters compared wildfires to the flaring off of natural gas as a byproduct of

\textsuperscript{72}For the lack of withdrawals see: R. F. Wilcox to Gabriel H. Abel, June 27, 1927. The efforts of participants to recruit others is discussed in Assistant State Forester [R. F. Wilcox] to J. Ross Robinson, April 17, 1925. Both letters in Box 2043, Folder "A-F Forestry Correspondence, Inspection Letters," Dept. records, Archives.

\textsuperscript{73}For illustration of who supported and opposed tax breaks on timberland, see: John Ise, \textit{The United States Forest Policy} (New Haven: Yale University Press, 1920), 362-364; and Robbins, \textit{American Forestry}, 26-27.

\textsuperscript{74}An indication of the concern of foresters for losses from due to fire is the discussion on the issue on an annual basis in the Board of Forestry's reports. The best example is the analysis of legislation to prevent forest fires in Board of Forestry \textit{Bulletin Number 5} (1905), 41-42.

\textsuperscript{75}Board of Forestry, \textit{Bulletin Number 1} (1901), 35-36.

\textsuperscript{76}Ambrose Waltman to Charles Deam, July 4, 1914, in Box 2, Folder 5 (1914), Deam papers, IN Division.

\textsuperscript{77}R. F. Wilcox to Rich Critchfield, July 22, 1927, Box 2043, Dept. records, Archives.
petroleum drilling, both destroying resources without benefiting people. Foresters believed that eliminating uncontrolled natural fires (i.e., lightning strikes) and restricting human use of fire in woodlands would protect the timber needs of future generations. Indiana foresters did not have the manpower for active fire fighting, but did work to persuade landowners to prevent fires by removing underbrush, dead wood, and to support legislation to restrict the use of fire to clear land.

The Indiana State Board of Forestry instituted wise-use management as governmental policy to combat the deforestation of the nineteenth and early-twentieth centuries. Founded in 1901 to protect the forest resources of the state and to look after soil and water quality, the Board of Forestry remained active until subsumed by the Department of Conservation in 1918. State and university foresters worked with timbermen to apply sustained-yield practices to the industry to halt the worst excesses in harvesting and milling. Indiana, Ohio, and Illinois formed the Tri-State Forestry Commission in 1919 to discuss timber use and remedies to deforestation. The commission aligned state and federal foresters with "members of the wood-using industries" and resolved that "current and past use [of forest resources] would leave the South as the only viable timber region [in the United States]." Foresters' collaborative efforts with timbermen reformed and increased the efficiency of timber use. A state forestry

---

79 For examples of efforts to prevent fires see: Bramble, Forestry and Conservation in Indiana, 9; R. F. Wilcox to Rich Critchfield, July 22, 1927, in Box 2043, Folder (A-F Forestry Correspondence Letters), Dept. records, Archives; and Ambrose Waltman to Charles C. Deam, July 4, 1914, in Box 2, Folder 5, Deam papers, IN Division.
80 On the Board's formation see: Board of Forestry, Bulletin Number 1 (1901), 6-7, 17, and 34-35; and Board of Forestry, Bulletin Number 17 (1917). The particular interests responsible for the creation of the Board of Forestry remain obscure.
81 Richard Lieber, ed., Report of the Tri-State Forestry Conference, October 23, 1919 (unpaginated), Box 2043, Dept. records, Archives.
committee established in Indiana in 1919 brought the Division of Forestry together with
the timber industry to reconcile forestry doctrine with practice.\textsuperscript{82} Foresters called on the
industry to enact procedures to decrease waste in harvest and to reforest logged areas,
which had proven effective at the reserve forest. Foresters also pressured legislators to
support wise-use policies.

Through reforestation, scientific management, and subsidies to timber owners the
Board of Forestry attempted to create a dependable supply of forest resources for future
use. With basic forest management defined, foresters added the clearing of underbrush
and the elimination of economically useless species to their goals. The Board of Forestry
demonstrated proper management techniques at its forest reserve and experiment station
(in Henryville) in Clark County, Indiana. During its second year (1902), the Board of
Forestry was responsible for planting over 123,000 trees.\textsuperscript{83} The agency continued to
concentrate on planting and wise-use management, largely ignoring preservation for
recreation.

The drive to improve the value of forests in the state by replacing (economically)
inferior trees with more useful species consumed much of Deam's time. His influential
Trees of Indiana (1911), discusses the uses and availability of each native and many exotic
species in the state. The treatise broadened the knowledge base of foresters and
timbermen allowing them to improve their ability to manage forests for high-quality
timber.\textsuperscript{84} Under his direction 113 acres of the forest reserve were planted in black walnut,


\textsuperscript{83} Board of Forestry, Bulletin Number 2 (1902), 19.

\textsuperscript{84} For a typically positive review of the importance of Trees of Indiana, see: Agnes Chase to Charles C. Deam, May 15, 1912, in Box 2 (1910-1914), Folder 3 (1912), Deam papers, IN Division. A number of similar reviews are collected in the same folder from correspondents in Florida and New York, at Harvard University and the University of Illinois, as well as various other locations. Board of Forestry, "Some Trees to Plant for Railroad Ties, Fence Posts, and Line Construction Poles," Bulletin Number 3 (1903);
American chestnut, hickory, oak, and other valuable timber species in 1905.\textsuperscript{85} He selected these species based on assurances of their future timber quality. As an example of his concern of gaining the best possible specimens, in 1912, Deam obtained a supply of white oak acorns, for planting at the nursery, guaranteed to produce superior seedlings in comparison to previous shipments.\textsuperscript{86}

Foresters expanded their planting efforts through experimentation with different tree species and forest-management techniques to improve the productivity of Indiana's timberlands. When Stanley Coulter supported Charles Deam's conservation efforts over Richard Lieber's attempts to create parks he acknowledged the importance of preserving small community forests to gain public support for forestry, but he considered industry's needs paramount.\textsuperscript{87} Coulter argued that the establishment of the most profitable timber species possible on the denuded hillsides of southern Indiana was the most pressing concern for foresters in the state and that reforestation offered the only opportunity to make the region economically stable. In his opinion, such an ambitious project depended upon residents following the recommendations of state-employed foresters on their own land.\textsuperscript{88} By attempting to influence the species make up of the state's future forests, the Board of Forestry continued to support timber harvest.

\textsuperscript{85} Board of Forestry, "Thirty Timber Trees of Indiana," \textit{Bulletin Number 5} (1905); Board of Forestry, \textit{Bulletin Number 6} (1906), 128-129; and Board of Forestry, \textit{Bulletin Number 12} (1912), 86.

\textsuperscript{86} C. J. Grimes to Charles Deam, October 7, 1912, in Box 2 (1910-1914), Folder 3 (1912), Deam papers, IN Division.

\textsuperscript{87} Coulter was the Dean of the School of Science at Purdue, a botany professor, and responsible for the creation of a forestry curriculum at the university, as well as a member of the Board of Forestry and several conservation organizations. Lieber would become the head of the Department of Conservation and was the most important individual in the creation of state parks. Deam was the State Forester, a botanist, and active conservationist.

\textsuperscript{88} Stanley C. Coulter to Charles C. Deam, March 28, 1917, Box 3, Folder 3, Deam papers, IN Division.
Replacing hardwoods with conifers also became a major component of foresters' programs in Indiana. Conifers offered more board feet per tree, a more rapid annual growth, and a greater survival rate from seedling to harvestable age when compared to the state's native hardwoods. This effort to alleviate timber shortages is an excellent example of the belief of Progressives that by establishing selected species (even though the chosen pines could not have naturally colonized Indiana without significant ecological alterations) the natural world could be reconstructed to efficiently meet the needs of humanity. In 1920, Charles Deam analyzed the success of seedlings planted at the reserve and considered white pine the best species to use in reforesting most of the state. For the following year Deam planned a near 100 percent increase in the number of conifers planted, from 14,000 to 24,000 seedlings. Foresters sought public support by informing interested individuals that conifers were superior to hardwoods in terms of timber and beauty. Indiana bears the legacy of this policy today as white pine has become dominant in second- and third-growth forests where they were introduced. Despite their efforts to establish conifers, the Division of Forestry also continued to manage hardwoods to the degree that they could review their policies in 1920 and claim: "Indiana is proceeding with the largest experiment in growing hardwoods ever conducted in the United States." The result of the Board of Forestry's reforestation activities was the re-establishment of forests in many of the denuded areas of the state.

---

89 Charles C. Deam, "Report of the Division of Forestry, 1920," 83-84, in Box 2041, Folder 2, Dept. records, Archives; and Graves, "Forests."
90 Clepper and Besley, "Forests," 92-100.
91 For an indication of the size of this project, a trained individual using hand tools can plant approximately 700 to 800 seedlings per day. Charles C. Deam, "Report of the Division of Forestry, 1920," 83-84, in Box 2041, Folder 2, Dept. records, Archives.
92 For an example, see: Acting State Forester (unnamed) to Theodore Boerste, December 15, 1926, in Box 2043, Dept. records, Archives.
93 "Press Release" August 19 and 20, 1920, in Box 2047, Folder 11 (Forestry-Publicity), Dept. records, Archives.
The Indiana Division of Forestry within the Indiana Department of Conservation succeeded the Board of Forestry in 1918. The Department of Conservation and the Division of Forestry exist in a similar form today. The core policies of the Division of Forestry were an extension of those of the Board of Forestry. The new agency sought to protect timber for harvest with the same goals as its predecessor: reforestation, scientific management, and subsidies to landowners. The Division of Forestry increased the emphasis on experimental work at the Clark County reserve forest. A major project at the reserve was the analysis of exotic trees for planting in Indiana. Catalpa and locust, promoted in 1905 for post stock, became anathema to foresters by 1919. During that year, disease and insect damage to those species at the reserve induced foresters to label them as unsuitable for Indiana. Experiments at the reserve also found these species unable to compete with native trees.94 As foresters gained experience and knowledge of Indiana's conditions and woodlands, they increased their use of scientific findings from the reserve. After 1918, forest management became increasingly professionalized in Indiana.

Although established shortly after the Civil War, well before concern for the loss of forests in the state, the office of Indiana State Geologist developed into a strong force for conservation in the first decade of the twentieth century. The State Geologist began as a position devoted to identification and recommendations on the use of natural resources.95 W. S. Blatchely, State Geologist for much of the early-twentieth century, was responsible for the redirection of his office. He joined the IFA, the Indiana Nature Study Club (NSC), and served as president of the Indiana Academy of Science,

---

94"Report of the Division of Forestry (Being the 19th Indiana Forestry Report)" (unpaginated), in Annual Report, The Department of Conservation, Fiscal Year 1918–19, Box 2043, Dept. records, Archives.
contributing papers and lectures on conservation in Indiana to all three. He used his governmental appointment to advance state and private cooperative resource management. The legislature demonstrated its support for these activities by maintaining the position throughout the era. The ability of a governmental official to alter his responsibilities in response to deforestation represents the acceptance of the need for a solution to degradation of forests.

From the creation of the office of State Geologist to the formation of the Department of Conservation, the Indiana government identified and managed resources for economic profit. The creation of state parks, depended on public support and began in 1916, demonstrating a shift within the state leadership. Richard Lieber, the preeminent individual in the establishment of the state's park system was also appointed to direct the new Department of Conservation at its creation. The transition in governmental conservation from heavily pro-industry, to a more balanced position between harvest and recreational use in the late-1910s, reflected the new value placed on forests. By viewing nature as more than a storehouse of commodities Indiana moved away from a strict reliance on wise-use policies.

As the first director of the Department of Conservation, Col. Richard Lieber, illustrated the ability of preservationists to work with individuals espousing conflicting strategies in order to achieve common goals. While Director of the Department of Conservation, Lieber

---

96 For examples see: W. L. Bryan to Charles Warren Fairbanks, December 6, 1910, in Box 16, Folder 5 (December 1910), Fairbanks papers, IHS (discusses Blatchely's appointment to the IFA's executive committee for conservation work); W. S. Blatchely, "William Watson Woollen--A Tribute" (1921); and W. S. Blatchely, "The Indiana of Nature: Its Evolution," president's address delivered to the Indiana Academy of Science, December 28, 1903, the latter two items are in Box 1, Folder 3, Blatchely mss., Lilly.

97 Frederick, "Richard Lieber, Conservationist and Park Builder," 112, 117, 120, and 134.


99 For a sympathetic treatment of Lieber's contributions, see: Frederick, "Richard Lieber, Conservationist and Park Builder." On the formation of parks in general see: Grieff,
Conservation, Lieber expanded his preservationist beliefs to include the wise-use philosophies of many of the Department of Conservation's operatives (i.e., foresters). Despite their regular interaction with various interests, preservationists generally promoted aesthetic over economic concerns dealing with forests. Stanley Coulter, a leading wise-use advocate, objected to Lieber's appointment on the basis of the colonel's support of parks. Coulter argued that Lieber "miss[ed] the real heart of the forestal proposition" and considered Lieber's policies "propagandistic" and "German." Coulter argued that Lieber depended on public sentiment rather than science to remove land from industrial use and to mandate legislatively all possible uses of forestlands whether for parks or for harvest. Coulter equated this with Germany's rigid system of forest management, also a significant criticism in 1918, because of anti-German wartime sentiment.

Lieber sought help for the preservation of forests throughout Indiana. After he addressed the NSC, a group known for its aesthetic leanings, the NSC it made its strongest statement in favor of the noneconomic value of woodlands. Despite William Watson Woollen's, founder of the NSC, donation of land for the establishment of a park with the stipulation that "the wildwood of it. . .be maintained as near as can be in its present state," the NSC also advanced wise-use conservation. Lieber, the NSC, and

"Parks for the People."

For discussion of pioneers in Indiana's state park movement see: Grieff, "Parks for the People," 17 and 22. The records of the IFA demonstrate the blurring of the line between park advocates and proponents of wise use. J. N. Hurty, "Shall We Protect and Preserve Our Streams," Marion Daily Chronicle (no date), p. 8, in Box 16, Folder 3, Fairbanks papers, IHS.

Stanley C. Coulter to Charles C. Deam, April 24, 1918; and Stanley C. Coulter to Charles C. Deam, November 12, 1918, both in Box 3 (1915-1918), Folder 4 (1918), Deam papers, IN Division.

The NSC discusses the beauty of trees in Hoosier Outdoors (1919): 195. For the Richard Lieber speech, "The Significance of State Parks," see: Yearbook, 1918. Both in NSC records, IN Division.

William Watson Woollen to Mayor and Board of Park Commissioners, "Instrument of
other preservationists attempted to save those areas of exceptionally outstanding natural beauty in Indiana from disturbance, but at the same time worked with wise-use conservationists throughout the state.

Several groups actively advanced wise use and were supported by scientists, timbermen, farmers, and people interested in forests for their beauty. The NSC and the Indiana Academy of Science contributed numerous studies of the problem of deforestation and proposed remedies. The Indiana Forestry Association (IFA) and the Indiana Hardwood Lumber Dealers' Association acted as the primary organs of the industry's position on conservation. A number of groups also incorporated in the early-twentieth century in an attempt to integrate their concerns over the loss of game animals with deforestation and water quality. Conflicts developed among conservationists, but dominant personalities generally cooperated to achieve mutual goals.\(^{104}\)

The NSC and the Indiana Academy of Science were the two associations most notable for their studies of deforestation in Indiana and wise-use methods of management. They approached nature with slightly different emphases, yet both advanced conservation. The NSC counted academicians among its members, yet directed its studies to its general membership, often less scientifically trained, but curious about the workings of nature. The academy provided a forum for rigorous study of the natural sciences. The organizations shared members and issues, but their different strategies occasionally produced divergent results.

---

Conveyance" (Indianapolis: November 22, 1909), 3, in NSC records, IN Division. This donation, located near Seventy-First Street and Shadeland Avenue, is still maintained by the city of Indianapolis as a park known as Woollen's Gardens.\(^{104}\) The Indiana Audubon Society (1898), The Nature Study Club of Indiana (1908), and The Indiana Forestry Association (1909) provide the majority of the evidence for this study because of their well-preserved records, but numerous other associations also existed to protect fish, game, birds, and bodies of water by the early-twentieth century.
The NSC, true to the Progressive era framework of the time, advanced nature study as a strategy for conservation in Indiana, believing a suitably educated populace would work to save their surroundings. Formed in 1908 and incorporated in 1913, the organization remained active into the 1970s. The group engaged such respected Indiana residents as Stanley Coulter, Amos Butler (president of the Indiana Audubon Society), and Willis S. Blatchely (Indiana State Geologist) to deliver lectures, present papers, guide tours of natural areas in the state, and promote discussion of the natural sciences. People representing national conservation, such as Enos A. Mills (a USFS forester), also addressed the club. The NSC believed that humanity must study nature in order to maintain the economic and spiritual base upon which it depended. The NSC did not align itself uniformly with wise-use or preservationism, a common practice among Indiana's conservationists. The group's members pursued and supported studies of nature from several viewpoints, retaining the club's appeal to a broad spectrum of the state's population.

The Indiana Academy of Science was true to its name in that it scientifically studied a wide range of issues pertinent to the state, with the need for the conservation of forests as only one area of inquiry. Members of the Academy of Science also published papers on many other conservation issues. Accepted disciplines within the natural sciences channeled analysis along the lines of wildlife, geology (including soils), water supply and quality, and most important for this project, forests. Contributors to the

---

105 For information on the first meetings of the club, see: Buzzers From the Roost, 1 (March, 1914). "NSC Minutes," (1913-1923), discuss the process of incorporation. Both in the NSC records, IN Division. The collection contains documents, particularly newsletters, that demonstrate the existence of the NSC into the 1970s.

106 Each individual gave several presentations to the NSC, for examples see the NSC records, IN Division. Speakers and their topics are most accessible in the annual "Yearbooks" produced and collected from 1913 through 1919.

107 March 13, 1909 entry, "First Secretary's Book" (1908), in NSC records, IN Division. William Watson Woollen, "Opening Address," delivered at the initial meeting of the NSC, recorded in the "First Secretary's Book," (1908), in NSC records, IN Division.
Academy of Science's annual publications often connected the disciplines and considered the threats deforestation posed to all resources.\textsuperscript{108}

Conservation-oriented topics that Academy of Science members covered usually noted deforestation as a central problem in resource management. In another article on the importance of forests to other resources, Glen Culbertson, president of the Academy of Science, considered the effect of forests on erosion and rainfall. He determined that loss of forests reduced precipitation levels, allowed extremes in droughts and floods, lowered the capacity of soil to retain water, and decreased evaporation. Deforestation reduced the amount of leaf litter and the density of roots holding soil from blowing or washing away in droughts and floods.\textsuperscript{109} Focusing on the ability of forests to stabilize related resource levels, the Academy of Science justified conservation to people more concerned with aspects of nature other than sustained yield management of trees. In a history of game management in Indiana, Michaud Howard, a biology professor at Purdue University in the mid-twentieth century, discussed the academy's past role in spurring legislation. Efforts to maintain game populations by stocking, licensing hunters, and closing seasons achieved notable success. These actions are important in this context because they were studies conducted by the Academy that related forest loss to declines in game but argued for management of game rather than habitat.\textsuperscript{110}

Members of the Academy of Science had witnessed the deforestation of Indiana and proposed various strategies to halt and reverse the trend. In so doing they demonstrated a belief in their ability to solve the problems of forest loss in Indiana through

\textsuperscript{108}The Academy of Science published bound collections of papers grouped according to discipline. The papers for each year were contained in single volumes except for occasional editions including two years.


the application of scientific findings. In published studies, these scientists proposed methods of maintaining a scientifically determined density of trees and eliminating species and specimens without economic value in order to eliminate the threat of deforestation.111 Stanley Coulter, as a member of the Academy of Science, warned that forest loss would increase unless proper measures were taken to prevent it. He then argued for experimentation to discover the productive capacity of each tree species and its ability to grow in various conditions.112

Charles Fairbanks's IFA was a visible organ of the wise-use response to deforestation in Indiana. Fairbanks, as the head and founder of the IFA, argued that properly managed forests would "add millions of dollars annually to" the state's financial well-being.113 The IFA acknowledged the aesthetic and recreational value of forests, but they upheld harvest as the highest utilization of woodlands. The individuals most devoted to the management of forests for use, were either engaged in the timber industry or the attempt to regulate nature scientifically for "efficient" production.

Conservationists held divergent views of the best way to achieve their goals and were often willing to consider other approaches when they proved more productive. Debate over the appointment of a State Forester in 1908 led Stanley Coulter, the representative on the Board of Forestry from Purdue University, to label Charles Deam, the nominee, unqualified for the position.114 Coulter considered Deam's background as a botanist insufficient experience for the more comprehensive practice of forestry. Coulter's avid support for Deam as State Forester four years later in 1913 was an indication of his belief that Elijah Gladden, appointed to succeed Deam, was merely a politician. In shifting

112Coulter, "Forest Conditions in Indiana," 447 and 452-453.
114Stanley C. Coulter to Willis S. Blatchely, December 14, 1908, Box 1, Folder 10 (1908), Deam papers, IN Division.
his support to Deam, Coulter demonstrated approval of the former State Forester's methods and goals for conservation.¹¹⁵ This practice of compromise characterized much of the conservation movement in Indiana.

Wise-use conservationists concerned primarily with forests often took on other issues as well. Forests served as the primary habitat for many of the state's game animals and birds, encouraging groups devoted to the management of woodlands and animals to cooperate. Individuals devoted to the maintenance of water purity and soil fertility also found the answer to many of their worries in the protection of forests. The combination of these interests strengthened the appeal of forest conservation by broadening its constituency.

Conservationists combined the fates of animals and forests to fuse their efforts and create a notable base of support. Clarence H. Smith, a founding member of the Indiana Audubon Society, demonstrates the cross-fertilization of conservation sentiment between people seeking to protect forests and individuals attempting to preserve wildlife. Smith spoke in favor of the economic and the spiritual value of birds as a member of the Indiana Audubon Society and participated in activities devoted to the aesthetic appreciation of trees with the NSC.¹¹⁶ The abundance of associations created to save animals and forests jointly demonstrates public support for the idea. In 1920, the Department of Conservation noted the annual meeting of the Indiana Fish, Game, and Forest League, a coalition of 46 local conservation organizations from throughout the state.¹¹⁷ In the same year, The

¹¹⁵Stanley C. Coulter to Charles C. Deam, June 6, 1913; and Benjamin W. Douglas to Charles C. Deam, June 6, 1913, both in Box 2 (1910-1914), Folder 4 (1913), Deam papers, IN Division. The former demonstrates Coulter's change of opinion concerning Deam. Coulter considered resigning rather than working with the new appointee. The latter presents industry's support for Deam. Douglas was an influential timber manufacturer in Indiana and close ally of wise-use conservation.
¹¹⁶"Program for the Eleventh Annual Meeting of the Indiana Audubon Society," May 1906; and J. E. Cook to C. Smith, February 6, 1921, both in Box 30, Folder 1, Smith papers, IHS.
¹¹⁷"Minutes of the tenth annual meeting of the Indiana Fish, Game, and Forest League"
Department of Conservation compiled a list of 124 similar groups of conservationists connecting wildlife and forests or bodies of water. Hunters, foresters, scientists, timbermen, and other individuals concerned with halting the degradation of nature, joined forces to further conservation.

Organizations working for forest conservation often incorporated arguments for the need of soil and water protection in their strategy. The Academy of Science acted in this manner when its president addressed the association in his annual address for 1909. He contended, the agricultural clearing of forests in southern Indiana reduced the region's water resources and increased the amount of topsoil lost to erosion. Through forest planting, he believed soil and water conditions could be restored to pre-agricultural levels. Editorial support for efforts to save soil and water through forest conservation exposed many people in Indiana to the argument that forests were necessary to maintain a pure water supply for cities and productive lands for agriculture. In attempts to gain public backing, conservationists often portrayed forests as checking the loss of fertile soils to rivers and valleys and preventing pollution from entering water sources.

The development of a conservation movement in Indiana in response to deforestation emerged as a version of national efforts to save forests. State actions fit within the national framework, but differed on specific methods and goals. The most significant difference was the ability of federal conservationists to remove large tracts of unsettled land from the public domain for timber management, an impossible strategy in

---

118 List of Fish, Game, and Bird Protective Associations," September 30, 1920, in Box R-2138, Folder 23 (Associations), Dept. records, Archives.
120 Newspapers demonstrated this, for examples see: Herman S. Chamberlain, Star (magazine section), August 1, 1909, p. 8; and W. M. Herschell, Indiana is Fast Becoming a Dry State and a General Water Famine is Sure to Come if Water-Retaining Forests are Not Maintained," News, October 24, 1908, p. 13.
Indiana, a state with no remnants of unsettled land by the twentieth century. Despite their differences, deforestation, prompted by agriculturists and later by timbermen, was a major factor in the creation both the national and state conservation movement.

Relative to the era of exploitation of forests by the timber industry in Indiana, conservation emerged early. Regions in the East, particularly New York, established strong conservation sentiment before Indiana, but these areas were also heavily harvested much earlier than Indiana. The Great Lakes region exhibited a less strident conservation movement at the turn of the century, although its timber industry peaked almost simultaneously with Indiana's. Portions of the West witnessed the creation of significant parks and forest reserves, but these were federal entities, usually opposed by residents of those regions. Indiana's early conservation efforts demonstrated a clear shift in attitudes from the ideas of inexhaustible resources, to a need for management of commodities to avert shortages. By incorporating some of the national and eastern examples in conservation, Indiana achieved important successes by the 1920s.
Conclusions:

"Indianapolis itself should have been built on columns, not less than three hundred feet high (of course of cement) so that the trees within the city would not be disturbed."\(^1\)

"C. J. Getz, B.S. Graduate Forester and City Tree Expert: All Work Guaranteed Scientifically Correct."\(^2\)

The joint study of conservation and the timber industry leaves many questions unanswered in each area, yet generates a more fully developed context in which the importance of each is discovered in relation to its counterpart. The forest conservation movement in Indiana emerged primarily as a response to the depredations of farming and the timber industry on the state's woodlands. Intimately related, these topics naturally yield to such an approach. Without a significant timber industry or the clearing of land for crops, the conservation movement would not have received the impetus to coalesce. Without the establishment of a conservation movement the timber industry would have passed through Indiana with no incentive to undertake sustained-yield harvests.

Each group that participated in the effort to save Indiana's forests contributed a distinct outlook and set of goals. The Nature Study Club of Indiana (NSC), the Indiana Academy of Science, the Indiana Forestry Association (IFA), and the Indiana State Board of Forestry provide the most demonstrative examples of interest groups devoted to forest conservation in the Progressive era. These groups undertook and recommended actions

\(^1\)Robert W. Furnas to E. J. Hancock, January 12, 1911, in Box 16, Folder 6, Charles Warren Fairbanks Papers, Coll. No. M-100, Indiana Historical Society, Indianapolis. (Hereafter cited as Fairbanks papers, IHS.).

\(^2\)Business card enclosed with C. J. Getz to Charles W. Fairbanks, November 25, 1911, in Box 16, Folder 8, Fairbanks papers, IHS.
to manage woodlands, reduce industrial waste, preserve timber, and re-establish forests. Each group and its individual members took up sides to promote various strategies that reflected their own beliefs.

The NSC epitomized a split set of beliefs. Chartered to study and disseminate knowledge of the natural sciences, as well as to undertake hikes to witness the beauty of the out-of-doors, the NSC combined its support of research with efforts to plant trees and preserve forests. With academics, timbermen, foresters, farmers, and other concerned members of the public as members, the NSC had a base diverse enough to demonstrate some support for any number of strategies. Scientific study of the natural world, one of the dominant facets of the club, appealed to the public in the context of the Progressive belief that a combination of technology and a properly educated populace would correct all problems society faced. The NSC drew on its eclectic membership to embrace measures ranging from complete preservation to wise-use forestry and became a leading organization in forest conservation by the end of the 1910s. Many of Indiana's efforts to

---

3"NSC Minutes, 1913-1923," 48, in the Nature Study Club of Indiana Records, Indiana Division, Indiana State Library, Indianapolis, discusses the club's original goals. (Hereafter cited as NSC records, IN Division.). For examples of the group's activities see Yearbook, 1914 and Yearbook, 1916, both in NSC records, IN Division.

4The organization's annual Yearbooks (extant for most of the 1910s) provide membership lists (copies in the NSC records, IN Division).


6Stanley Coulter gave several lectures to the NSC as a member, seven in 1916 alone, almost all of which supported wise-use management. "Yearbook for Columbus NSC, 1916-1917," Box 2, Folder ("material from other organizations"), NSC records, IN Division. Other members presented opposing views; an example is John S. Wright, "The Trees of Turkey Run," Hoosier Outdoors (February 1919), 195, in NSC records, IN Division. Wright argues for the protection of trees based on their "beauty."
protect timberlands were characterized by this drawing together of individuals with disparate ideologies.

The Indiana Academy of Science carried out scholarly studies of forest conservation as a response to the harvesting of the state's woodlands by the timber industry. The published proceedings of the Academy of Science regularly included evaluations of deforestation in the section devoted to the natural sciences. The polemical addresses of Academy of Science presidents protesting forest loss and wasteful harvest demonstrate their concern for woodland conservation.\(^7\) Contributors to the Academy's proceedings promoted scientifically "correct" methods of harvest and timber use through articles illuminating how timbermen could maintain forests, yet continue to reap profits.\(^8\) The application of scientific rigor to questions of the role of timber harvesters in conservation elevated the Academy to a position of leadership among conservationist organizations.

The IFA drew primarily on a base of individuals committed to the preservation of the timber industry and used its influence to improve the industry's image while securing future harvests. Not entering the debate over forest use until its formation in 1909, the IFA built on the groundwork of pioneering forest conservationists in Indiana, such as John Brown.\(^9\) By utilizing existing programs and sentiment to reduce forest loss, the IFA

---


\(^9\) John Brown was an early advocate of forest preservation. He formed a short-lived Indiana Forestry Association in the late-nineteenth century and edited *Aboriculture*, neither effort carried over into the new century. John P. Brown to Charles W. Fairbanks, October 24, 1910, in Box 16, Folder 3, Fairbanks papers, IHS, demonstrates the IFA's dependence on Brown's earlier forest conservation work.
succeeded in gaining membership and rapidly expanding throughout the state. The group's program of creating and preserving municipal forests for public recreation portrayed the IFA as an institution devoted to the welfare of the general public.\textsuperscript{10} The IFA sought to direct public opinion to favor wise-use harvest and management of woodlands.\textsuperscript{11} The leader among private organizations devoted to improving the image and practice of forestry, the IFA pursued conservation and backed industrial concerns.

The Indiana Hardwood Lumbermen's Association (IHLA) took a leadership position among industrial groups not directly connected to the harvest stage, most of which followed the agenda of the IFA. Formed in 1899 by Samuel Burkholder, a Crawfordsville, Indiana, lumberman, this association was one of the first to pursue conservation on a regular basis in Indiana and remained active throughout the first quarter of the twentieth century. The IHLA was represented on the Board of Forestry from its beginning, an official recognition of the lumbermen's position in the industry.\textsuperscript{12} The IHLA fought forest loss by advising timbermen and the public of the dangers deforestation posed to the forest-products industry and the entire economy of the state. The association also worked to eliminate threats to the availability of future supplies of profitable timber.\textsuperscript{13}

\textsuperscript{10}For a discussion of the rapid expansion of the IFA, see Stanley C. Coulter to Charles W. Fairbanks, September 26, 1913, in Box 17, Folder 2, Fairbanks papers, IHS. For an illustration of the attempts of the IFA to place its municipal forest program in the public eye, see "Attica Grows Forest Trees on People's Land . . . ," Indianapolis News, January 7, 1911, p. 13; and Samuel J. Record, "The Forestry Problem in Indiana," Indianapolis Star, November 13, 1910.
\textsuperscript{11}In its first five years the IFA was discussed in over ten articles without a single negative comment in the Indianapolis Star and the Indianapolis News.
\textsuperscript{12}W. C. Bramble and F. T. Miller, "Forestry," in Alton A. Lindsey, ed., 1816-1916 Indiana Sesquicentennial Volume Indiana Academy of Science: Natural Features of Indiana (Indianapolis: Indiana Academy of Science, 1966), 550; Indiana State Board of Forestry, Bulletin Number Four, (Indianapolis: Wm. B. Burford, 1904); and Board of Forestry, Bulletin Number 13 (1913).
\textsuperscript{13}Depictions of timber shortages in the popular press often credited the IHLA with providing the necessary information, See: "Indiana Forests," Indianapolis Journal, January 20, 1901, p. 3; and "Lumbermen Wish Forest Reservation Retained," Indianapolis News,
The Board of Forestry addressed forest conservation comprehensively, but never abandoned its devotion to wise-use policies. This state agency employed foresters to work with farmers and industrialists to manage existing woodlands, create new forests, and to experiment with scientific forestry while maintaining the state's commitment to private ownership of woodlands. The Board of Forestry concentrated on halting the exploitation of forests by the timber industry and establishing new ways of ensuring future harvests. With five representatives, all ideologically in favor of industry, the Board of Forestry presented an unmitigated pro-harvest approach to timber use. The agency's responses to deforestation, extensive replanting, experiments with faster-growing and more-hardy trees, and tax relief to forest owners who engaged in scientific management, were vigorous statewide campaigns, but also products of a pro-industry agenda.  

The Division of Forestry, successor to the Board of Forestry (in 1913), continued many of the earlier agency's programs, but began to incorporate nonextractive uses of forests. The Department of Conservation unified the various state agencies dealing with natural resources, bringing forestry together with parks and entomology in a mix that produced both cooperation and contention over management of woodlands. No longer the sole authority on timber use, foresters worked with other agencies to maintain their position as experts on the utilization of forest resources. With official unification of the several interests of conservation in a single state agency, woodland conservation and timber use were forced to adapt to a new trajectory. Previously, the Board of Forestry

January 20, 1909, p. 20.

14Board of Forestry, Bulletin Number 1 (1901) presents the Board's initial purpose and goals. For an evaluation of the Board of Forestry's work, see Report of the Division of Forestry "(Being the Nineteenth Indiana Forestry Report)," in Box 2043, Department of Conservation Records, Indiana State Archives, Indianapolis. (Hereafter cited as Dept. records, Archives.).

15The Annual Report of the Department of Conservation, Fiscal Year 1918-1919, in Box 2043, Dept. records, Archives, contains reports from each division which illuminate the overlapping authority in the new department.

93
could discount the opinions of individuals outside the timber industry and structure state forest conservation policy to benefit industrialists and landowners. In the Department of Conservation, foresters had to consider competing uses and desires when creating forest policy. By working with other interest groups in the state government, the Division of Forestry lessened the state's devotion to industrial conservation and also began a program of purchasing land for direct management by the state.

Until late in the 1910s, concerned individuals in Indiana responded to deforestation by insuring a future supply of timber would exist. By the end of the decade, support for the establishment of state parks began to replace the overwhelmingly wise-use conservation of the previous twenty years. The reservation of land for state forests, other than the reserve forest in Clark County, did not occur to any notable degree in Indiana until 1929 (see Map One for the location of Indiana counties). The federal government also refrained from creating any national forests in the state until it established the Hoosier National Forest in 1951. Despite these later developments, conservation in Indiana before World War One remained pro-industry.

The wide variety of issues considered by conservationists in Indiana helped to strengthen the movement. The timber industry used its economic and political connections throughout the state to set the basic agenda followed by other conservationists and preservationists. A single-policy or narrow-minded interest group could not have reached across the spectrum of opinions within Indiana to gain the necessary support throughout the state.

Individuals affiliated with the timber industry pursued measures designed to meet future demands and to increase profitability. Reforestation subsidized the industry by providing resources for the next generation of timermen, as did tax breaks and

---

management assistance to landowners. Foresters and timbermen worked to establish new forests and transform existing woodlands into the most productive units possible for harvest. Harvest practices were redesigned to remove timber while retaining the greatest possible amount of timber for future use. Reduction of waste and the prevention of forest fires did lead to woodland protection, but timbermen were more concerned with obtaining a future harvest than in merely creating forests. Lower waste in manufacturing was also promoted by industrialists in an effort to maintain their ability to obtain a living from forest resources.

Among conservationists not directly connected to the timber industry another set of issues evolved, which both co-opted and strengthened the position of the industry in the conservation of forests. The pursuit of pure scientific knowledge of the workings of nature, longings for idealized aesthetic qualities, and a desire to preserve extant forests for spiritual and recreational values drew some preservationists and conservationists together while dividing others. Academic research often supported industry, and in such cases conservationists and preservationists generally opposed one another. But some wise-use proponents supported the withdrawal of lands from harvest as a resource for scientific study and lent support to the work of preservationists.17 With no true wilderness areas in the state by the late-nineteenth century, arguments to withdraw land for this purpose, important at the national level, had little impact in Indiana. Aesthetic interpretations of nature dominated the thoughts of many Indianans, but until the late 1910s, they did not possess the power to change the actual use of forests.

The location of pro-industry conservationists in prominent governmental, educational, civic, and economic positions allowed them to improve the opportunities for their policies to be implemented. Codification of the industry's sustained-use ideology

17 Stanley C. Coulter to E. B. Williamson, November 21, 1912, in Box 2, Folder 3, Charles C. Deam Papers, IN Division, recognizes the importance of maintaining forests for scientific research. (Hereafter cited as Deam papers.).
through the Board of Forestry ensured governmental support of their opinions, as this agency dominated forest policy in Indiana for over a decade. The era of wise-use forestry in Indiana, the early-twentieth century, reflected the national interest in conservation, Progressivism, and the establishment of forestry as a scientific field. Stanley Coulter, at Purdue University, and Mason Thomas, at Wabash College, headed forestry programs in the state that enhanced the education level of the field. Able to guide a generation of foresters and industry professionals, Coulter and Thomas affected forest use for many years beyond their personal involvement in conservation. Owners of timber and milling businesses used their economic influence in communities, to promote industrial interpretations of forests for future use. Members of the industry feared the loss of the forests they depended on and utilized their positions to advance their needs through publicity and direct action.

The exploitative timber use of the nineteenth century established the need for conservation-minded harvest by the early-twentieth century. Agricultural clearing had impacted forests severely, but decreased in importance by the last third of the nineteenth century. For forest conservation to succeed the timber industry, itself, had to accept the movement. Before timbermen feared deforestation they harvested trees with reckless abandon. No thought was given to managing woodlands for future growth or to removing

---

18 For a discussion of the role of Stanley Coulter in conservation, see: John G. Coulter, The Dean (Lafayette, IN: 1940). An example of Thomas's work is E. C. Pegg and M. B. Thomas, "The Woodlot for Central Indiana," Proceedings of the Academy of Science (1909), 419-440; see also Charles W. Fairbanks to Arthur W. Brady, August 1, 1911, in Box 16, Folder 7, Fairbanks papers, IHS. The general framework of Progressivism and conservation is developed in Hays, Conservation and the Gospel of Efficiency.

19 An example of the timber industry as the primary employer in rural Indiana is in Howard L. Nicholson, "Swine, Timber, and Tourism: The Evolution of an Appalachian Community in the Middle West, 1830-1930" (Ph.D. diss., Miami University, Oxford, Ohio, 1992), 110-122.
timber without damaging young trees. With such destructive methods, timbermen left forests unable to reproduce themselves for exceptionally long periods.

As timbermen recognized the impact of their wasteful practices, they moved to reduce the devastation of forests. With narrower kerf saws, millers obtained greater yields from each log. Timbermen also reduced waste by including more of the top and butt portions of each tree in logs. Foresters' efforts to establish harvest programs with timber buyers and sellers helped allow forests to remain productive sources of future timber. Conscious efforts among loggers to reduce slash also lowered the threat of wildfire, thus protecting forests from catastrophic destruction. These actions were all harvest oriented, but they did contribute significantly to maintaining standing forests in Indiana.

Through over harvest and thoughtless exploitation of forests in the nineteenth century, the timber industry forced itself to change drastically to maintain profits in the twentieth century. As timber supplies fell the price rose, forcing greater utilization of available resources. The use of new veneer saws (which allowed the use of previously disregarded stumps in production) emerged directly from a greater demand for resources and was a single example of a technical solution to forest loss. Bandsaws also offered the opportunity to reduce the amount of valuable timber lost as sawdust, but achieved relatively little acceptance among Indiana's small mills.

21 For timber industry responses see Gannett, ed., Report of the National Conservation Commission, v. 1., 57-60.
22 Daniel Lee Clark, "The Indiana Hardwood Industry: Study in Small Business Enterprise" (Ph.D. diss., Purdue University, West Lafayette, Indiana, 1986), 380, for information on bandsaws. For an interpretation of overharvest, see ibid., 146-167.
By working with timbermen, foresters shaped the industry's response to deforestation and determined the conservationist policies of this coalition. The actions of the State Foresters, W. H. Freeman, Charles C. Deam, and Elijah A. Gladden, best demonstrate the importance of foresters to conservation in Indiana. They proposed policies for the Board of Forestry, managed the Clark County reserve, and corresponded with timber users and owners throughout the state. The first State Forester, Freeman, established the importance of foresters among timbermen and conservationists. Deam only held the position four years, but did more to integrate the timber industry and forest conservation than any other individual. Gladden publicized earlier timbermen's responsibility for deforestation and informed the public that the timber industry of the early-twentieth century was concerned with the re-establishment and protection of forests.24

State Foresters worked with timbermen through example, publicity, and personal correspondence based on the context of state opinion in which they worked. Each managed the reserve forest while in office, to demonstrate wise-use forestry. Freeman began work at the reserve in 1903 and concentrated on reforestation and determination of fast-growing and disease-resistant trees. His actions reflected the demands of the public for an increase in the quantity and quality of forests in the state as expressed through newspapers and conservation organizations. Deam entered the office and transformed the reserve into a research forest for wise-use management, including forest cleaning, thinning, and experimental planting and harvest. He acted on the belief that science could improve nature. Gladden dealt with the demands of the powerful conservation movement. To alleviate its concerns, he stressed publicity of the industry's efforts to establish forests and maintain existing woodlands.

24 For the final reports of Freeman, Deam, and Gladden, respectively, as StateForester, see Board of Forestry, Bulletin Number 8 (1908); Board of Forestry, Bulletin Number 12 (1912); and Board of Forestry, Bulletin Number 17 (1917).
Foresters and timbermen reformed the industry in response to deforestation and public opinion. Foresters provided strategies and timbermen carried them out in a concerted effort to enhance conservation. The rise of such organizations as the IFA and IHLA, which made conservation for use industrial objectives, demonstrated not only timbermen's reaction to forest loss, but also to the negative image many people had of the industry.25 The emergence of industry-based organizations and their acceptance of input from governmental foresters also points to a lack of a predetermined solution. Without a proven strategy to make their limited resources continue to supply profits, timbermen sought assistance from recognized scientific advisors--foresters.

One aspect of the co-evolution of the timber industry and conservation sentiment within Indiana looms above all others: the transformation from a migratory and exploitative industry to a more stable occupation based on sustained-yield forestry. As discussed throughout this study, various actors and incidents promoted this change. A philosophical shift from the idea of forests as inexhaustible to a fear among timbermen that they would witness a timber famine occurred at the center of change in the industry. Harvesters and millers grew uncomfortable with the loss of resources throughout the state and moved to alter their industry so they would not risk losing employment. All aspects of the increase in conservation sentiment turn on this ideological awakening.

In Indiana, the desire of individuals to address the complete loss of forest resources, which many perceived as destined to occur in their lifetimes, rose in the last decade of the nineteenth century and gained supporters for the next quarter-century. The idea of a timber famine, first discussed in connection with Europe by George Perkins Marsh in 1864, was projected onto the forests of the United States in the late-nineteenth

25 Requests for information on forestry techniques directed to the IFA and the Board of Forestry from timbermen, illustrate the value placed on professional advice. For examples, see: C. J. Grimes to Charles C. Deam, October 7, 1912, in Box 2, Folder 3, Deam papers, IN Division; and Charles H. Barnaby to Charles W. Fairbanks, January 20, 1911, in Box 16, Folder 6, Fairbanks papers, IHS.
century and became a prominent theme for the Board of Forestry and industrialists in Indiana by the first years of the twentieth century. For the next two decades, ideas of sustained-yield forestry (advocated by Gifford Pinchot and others at the national level) increased in significance in the creation of forest-use policies in Indiana. Deam, State Forester for the Division of Forestry, quoted Pinchot's warning of over-used and under-managed forests and urged more intense control of woodlands in the state. Timbermen and foresters combined their efforts to reduce the exploitative nature of the industry and to avoid the feared timber famine.

The acceptance of conservation-based methods of forest use, which offered greater costs and lower profits in short-term analyses, did not occur without protest. The activities of scientists, many timbermen, foresters, newspaper editors, private citizens, sportsmen, and legislators forced recalcitrant industrialists to realize Indiana forests no longer provided unlimited resources by the first decade of the twentieth century. Wise-use conservation and preservation came into opposition by the late-1910s with the first state parks. Debates continue to rage among foresters and the various interests involved in protecting forests today over the merits of wise use and preservation.

The past does not easily reveal "lessons" or solutions for the present. Even so, the successful strategies of wise-use conservationists in Indiana from 1890 to 1920 do offer examples worth pondering by those interested in conservation of forests today.

For the original idea, see: George Perkins Marsh, Man and Nature (1864), David Lowenthal, ed. (Cambridge, MA: The Belknap Press at Harvard University Press, 1974). The first worries of the Board of Forestry are in Board of Forestry, Bulletin Number 1 (1901), 7. A demonstration of the concerns of timbermen can be found in John F. Campbell to Charles W. Fairbanks, September 21, 1910, in Box 16, Folder 3, Fairbanks papers, IHS. In this letter Campbell claims to have recognized the problems of deforestation a decade earlier.


Conservationists dealt with Indiana's inability to secure state and federal lands by working closely with concerned individuals. The timber industry, once convinced of the seriousness of the situation, became one of the greatest allies of conservation, albeit for future use. Appealing to private landowners with tax incentives and free advice on how to manage woodlots most successfully secured a long-term forest base for the state that still exists at the end of the twentieth century. The drive to establish state parks was most successful when Richard Lieber went to the people for donations to purchase the land and imposed a charge on admission so the parks could support themselves without reliance on governmental whims. Cooperation from the timber industry was also essential to the early parks, when powerful industrialists opposed a park, as in the case of Hoosier Veneer's attitude towards Turkey Run, it was not created (at least not until the company decided to sell the land to the state). By considering these factors concerned individuals can make more appropriate decisions today. Conservation in the early-twentieth century depended on support from industry and the public, both feeling threatened by deforestation. When these interests were united the movement was able to achieve success.
Selected Sources

Primary

Manuscript Collections

Blatchley, Willis S. mss. Lilly Library, Indiana University, Bloomington.

Deam, Charles C. Papers. Manuscript Collection, Indiana Division, Indiana State Library, Indianapolis.


Hoffman Brothers mss. Lilly Library, Indiana University, Bloomington.

Indiana Department of Conservation, Records 1902-1946. Indiana State Archives, Indianapolis.

Indiana Forestry Association mss. Lilly Library, Indiana University, Bloomington.


Lieber, Richard Collection. Coll. #L90. Manuscript Collection, Indiana Division, Indiana State Library, Indianapolis.


Periodicals


Indianapolis Journal. 1899-1901.

Indianapolis News. 1899-1915.

Indianapolis Sentinel. 1901.

Indianapolis Star. 1906-1924


Government Documents


Books


Secondary Periodicals


Government Documents


**Books**


Coulter, John G. *The Dean*. Lafayette, IN: 1940.


109


**Theses, Dissertations, and Unpublished Works**


Harlan, Rita W. "Eagle Creek History Project Report" (May 16, 1994). Indianapolis: Division of Historic Preservation and Archaeology.


David Thomas Benac

Education:
August 1995- Present Indiana University Purdue University Indianapolis, IN (IUPUI), candidate for M.A. in public history. Degree expected in summer 1997.
August 1993- May 1995 Michigan State University, East Lansing, MI (MSU), B.A. degree in history.
June 1992- August 1993 Alpena Community College, Alpena, MI (ACC), course work in general liberal arts (history).

Experience:
May 1997- August 1997 Graduate student intern (full time), for the Schroeder Saddletree Project, Madison, IN

Documentation: Photography of site with black and white and color slide film for display and records. Labeling and recording of recovered artifacts.

Archaeological activities: Participation in an archeological field school conducted on site to gain experience with techniques of creating test plots, unearthing artifacts, and performing preliminary cleaning on the objects.

Public programs: Assisted the project director in setting up for volunteer groups, as well as planning and carrying out a radio and a slide presentation.

August 1996- May 1997 Teaching assistant, at IUPUI

Courses: United States survey history course covering reconstruction through the 1970s.

Grading work: Prepared, administered, and graded exams, and essays.
Instructional work: Ran review sessions, held office hours, and limited lecturing.

July 1996- August 1996 Graduate student research intern (full time), for the Huddleston Farmhouse Inn Museum, Cambridge City, IN.

Research: Prepared a substantial report on the agricultural activities of John Huddleston (the mid-nineteenth century owner of the farm). In the report, I drew connections between John Huddleston and the progressive farmers of the mid-nineteenth century with specific study of eastern Indiana and the Midwest.

May 1996- June 1996 Part-time researcher (three-quarter time), for the Jesse Besser Museum, Alpena, MI.
Research: Created a study of resources relative to the 1819 Treaty of Saginaw in northeastern Michigan. The project consisted of extensive archival and secondary source study of treaties dealing with land transactions between the U.S. government and Native Americans in Michigan and subsequent dispersal of these lands to settlers.

August 1995-1996  Graduate student intern (half-time), with the Indiana State Museum May 1996 (ISM), in the collections department, Indianapolis, IN.

Collections work: Catalogued, cleaned, computerized, and organized collections. Responsible for recommendations as to the removal or restoration of artifacts based on their historical significance and physical integrity.

Exhibition work: Assisted as collections representative on development teams dealing with incoming traveling exhibits, and assisted in design of curators' case displays.

Research work: Researched to obtain information on firearms collection and the donors of artifacts with no provenance.

April 1994- July 1995  Assistant to the Collections Manager, at the Michigan State University Museum (MSU museum), in the Folk Arts Division, East Lansing, MI.

Collections work: Accessioned, catalogued, transported, cleaned, and photographed artifacts. Also computerized collections and assisted in the renovation of artifact storage space.

Exhibition work: Assisted with overall design, text, and artifact selection.

Festival work: For the Festival of Michigan Folklife in 1994 I supervised a crew to set up and remove demonstration areas. During the festival I assisted with infrastructural maintenance and exhibit interpretation.

General: I also aided in the completion of grant applications.

Exhibits and Published/Unpublished Research:

October, 1994: Michigan State University, Folk Arts Division (MSU museum), assisted with installation of the Michigan Heritage Hall display for the year. Displays heritage award recipients with a description of their crafts.

December, 1994: MSU museum, worked on traveling museology exhibit. Primarily a fundraising exhibit to display the purposes and policies of the museum.

April, 1995: MSU museum, member of a three person team which designed and installed an exhibit on the culture of New Guinea.
September, 1995: Indiana State Museum (ISM), helped the curator of history design and install an exhibit on firearms in the U.S. after the civil war.

September, 1995-May, 1996: ISM, acted as collections representative on a team to display "Memories in Mourning," a 2,000 square foot traveling exhibit from the Strong Museum in New York.

June, 1996: Jesse Besser Museum, comprehensive research guide to the 1819 Treaty of Saginaw and other treaties concerning northeastern Michigan.


Related Course Work:
--Exhibit Design and Theory (MSU, upper division-undergraduate level)--
--Public History--
--Historical Methodology--
--Seminar in U.S. History--
--Historiography--
--Colloquium in U.S. History--
--Environmental History--