

# William Willard Ashe and the Acquisition of National Forests in the Eastern United States

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The recent centennial of the passage of the Weeks Act offers a good time to reflect on the unique contributions of some of the people who worked behind the scenes to follow through on this legislative act that gave permission for the federal government to start purchasing national forest lands in the eastern United States. This act authorized the purchase of forested, cutover, or denuded private lands in the watersheds of navigable streams in order to secure more favorable flows of water in valleys and other low lying areas. Reflections on those who contributed to this conservation milestone follow the excellent historical work of Charles D. Smith that appeared in the *North Carolina Historical Review* a little over fifty years ago.<sup>1</sup> Charles traced the complex story of the Appalachian National Park Association at the beginning of efforts to create significant amounts of public lands in the southern Blue Ridge region. As a testament to the success of these conservation efforts fully one-third of the region is now either in national forest or national park lands.<sup>2</sup>

One person who deserves more attention in this regard is William W. Ashe who worked in a wide range of fields including the emergence of forestry in southeastern North America, the acquisition of national forest lands in the east, botany, dendrology, soil conservation issues, water quality, and the application of ecological concerns in Research Natural Areas, forest typing, and some proposed state parks. Since Ashe was not directly involved with efforts to set aside national parks in the east, this article does not cover the history of these parks. The article focuses primarily on Ashe's forest conservation work in the southeastern part of the United States before the New Deal, before the Civilian Conservation Corps, and before the formation of the Wilderness Society. The geographic focus is mainly in the mountainous southern Blue Ridge region where most early national forest purchases took place, though Ashe worked in many parts of eastern North America.

Unlike many American foresters whose agriculturally oriented management practices stem largely from Germany, Ashe was among a small group of early foresters who espoused an approach that made sense for North America.<sup>3</sup> The vision for this approach involved balancing the needs of production, conservation, and a degree of preservation in a more geographically and ecologically oriented way. This guided Ashe's work in land acquisitions and his ideas about timber management planning on both the eastern national forests and some private tracts. He appreciated fine surviving examples of forest types native to the eastern United States. Some of these uncut forests have been rediscovered by a number of researchers in western NC and beyond through a return to ground truthing and primary sources related to the early land acquisitions process. This work has joined the past with the present, though the originality and vision that was present among some employees of the early US Forest Service was swept aside by the dominance of timber production concerns that have firmly gripped the agency from the 1940s onward.

William W. Ashe does not fit neatly into the narrow categories of most specialists. He also had a complicated work history that spanned a forty-year period.<sup>4</sup> This is due in part to his involvement with timber issues, forestry, and botany in the 1890s when there were few places to get employment in these fields, especially in the southeast. His work with the US Forest Service began when the agency started in 1905. He was hired for a year's work in Virginia, and the following year he became a Forest Assistant. By May 1909 he had settled into full time employment with the agency, and his involvement increased when the Weeks Act passed and he was promoted to Forest Examiner in 1911. Altogether, his career in the early US Forest Service covered a little over 25 years, longer than that of either Aldo Leopold or Gifford Pinchot.<sup>5</sup>

According to Frank B. Vinson, the south supplied few leaders in forest conservation efforts, though it is clear that numerous southern representatives in the US Congress favored the formation of national forest lands in the east. Ashe is on a list of nine prominent southern conservationists, according to Vinson, and he stands out as being among four who are actual natives of the southeast.<sup>6</sup>

## Background

Before delving into the details of Ashe's career it is important to know where he came from. He was a dedicated naturalist and forester who had both direct experience and a continued interest in a wide range of topics related to forestry, geography, and biology. This pattern can be traced to his youth at Elmwood in Raleigh, NC, where he was partially home schooled, and where his interests in botany, taxidermy, writing, and graphics began. H. H.

Brimley, who worked with Ashe and was a curator of the State Museum of NC, stated it plainly "...his active brain always kept him from any narrow particularity and he was exceptionally broad-minded in his scientific interests".<sup>7</sup> Two people close to Ashe, namely his closest brother Samuel and Leon Kneipp (a coworker in the USFS Division of Lands), referred to him as a genius in comments made after his death.

William W. Ashe was the only scientist in his immediate family, and though he was first in a line of nine children, he did not assume the role most first-borns take. He descended from one of the most prominent families in North Carolina and from the Willards of Massachusetts. The Ashe family includes ancestors who served collectively in the following governmental bodies: Colonial Assemblies, the NC Assembly, the NC Legislature, the US Continental Congress, the US Congress, and as Governor of NC. There were lawyers and judges, as well as soldiers and officers in the Revolutionary and Civil Wars. William rose to middle class or upper middle class status after his family lived through deprivations that existed in the Piedmont of North Carolina after the Civil War. Correspondence provided by the NC Department of Cultural Resources shows that he retained some of the discriminatory attitudes toward racial minorities he grew up with, though by most accounts his behavior toward women of his own race, both professionally and personally, was caring and enlightened.<sup>8</sup>

Ashe's wife, Margaret, descended from two prominent families in Raleigh, notably the Henrys and the Haywoods. The latter were among founding members of the city. William and Margaret were lifelong Episcopalians, having both been baptized at Christ Church in Raleigh. They became acquainted through tight social circles of this kind. In later years Ashe named numerous plants after her, both before and after the death of her first husband, Dr. Joseph O. Wilcox. The first listing for *Quercus margaretta* was in the Journal of the Elisha Mitchell Scientific Society in 1894. Later listings for *Crataegus margaretta* appeared in print in 1900, 1903, and in Charles Sargent's *Manual of the Trees of North America* in 1905 when Margaret was a widow and the two were likely courting. Ashe's naming of plants in this way continued even after the couple married in 1906.

Though William was esteemed by members of his family no one there attempted to assemble his full story. This was also true of Margaret and her extended family. Ashe did not have children of his own, though he was a step-grandparent to the children of two of Margaret's daughters from a previous marriage. Like many men of his generation Ashe was modest about his own accomplishments. His strengths came from inquisitiveness and practice, not from climbing social or academic ladders.<sup>9</sup> He did not write an autobiography, due either to a lack of interest or particularly of time. An excerpted statement from a letter to his father on January 21, 1932 reveals how harrowing his schedule was even in the last months of his life. He wrote "...it seems that I never have time to do anything any more, not even to be operated on and waste my money in that way."<sup>10</sup> Ashe died rather suddenly from complications of hernia surgery at the age of fifty-nine. This pulled him from the forestry scene as the country slid deeper into the Great Depression. We are very fortunate that the noted USFS Plant Ecologist William A. Dayton became Ashe's first biographer. Dayton produced four published contributions, along with related correspondence spanning from 1932 to 1949.<sup>11</sup> His bibliography of works written by Ashe formed the basis of an update which now consists of 175 entries organized by subject.<sup>12</sup>

## Early Work in Forestry

In many ways W. W. Ashe was among the people who carried out the idea of establishing national forests in the east. The idea began to crystallize in the early 1890s with the likes of Joseph A. Holmes and Charles S. Sargent. Holmes was Ashe's geology and botany professor at the University of North Carolina, and later became his employer in the NC Geological Survey (NCGS). Holmes is credited with introducing the idea of federal forest reserves to Gifford Pinchot at the Brick House on Biltmore Estate in 1891.<sup>13</sup> The next year, from July 9th into August, a party of academics and practitioners, including Holmes and Ashe, took a long trip into western NC to collect materials and information for displays planned for the Columbian Exposition. During this documented trip Charles Sargent published two articles in *Garden and Forest* that officially called for the creation of forest reserves to preserve a portion of the southern deciduous forest.<sup>14</sup>

The early 1890s was a formative period in other ways as well. The NC Geological Survey (NCGS) had been created by the NC General Assembly under the direction of J. A. Holmes. This continued a tradition of good work, as North Carolina had organized the first state geological survey in the United States in 1823. Ashe started as Assistant in Charge of Timber Investigations with NCGS in the summer of 1891 at the age of 19, soon after graduating from the University of North Carolina with a Bachelors degree. This was *before* Gifford Pinchot was hired to work at Biltmore Estate in December of that same year. Ashe continued his formal education at Cornell University, at the urging of Holmes who had gone there previously and received a degree in geology. After completing botany and geology courses, Ashe's hand written and hand drawn Masters Degree thesis was completed in the spring of 1892.<sup>15</sup> It contained many of the ideas that later manifested in his work with NCGS. Application of these ideas included numerous field outings and surveys to assess timber conditions in three distinct geographic regions of North Carolina. Publications he worked on included over a dozen detailed NCGS bulletins and articles with topics ranging from the overall condition and availability of forest resources in the state; specific conditions for the eastern part of the state; the sad state of affairs with longleaf pine; gathering turpentine; forest fires; timber markets in the state; pasturage and cattle values, and an examination of some specific swamp lands.

Of all the bulletins that were produced at this time, likely the most important was *Timber Trees and Forests of North Carolina*.<sup>16</sup> Much preparation had gone into providing this comprehensive guide to the location, growth potential, and forest environments of numerous valuable trees species in the state.<sup>17</sup> It was completed in 1897, the year state-appropriated funds for forest work in NCGS began to wane. Despite this development, the bulletin was a turning point that basically launched Ashe's career. A year after it was published he wrote home from Washington, DC, stating "My work is here extremely favorably commented upon, while a review of the last bulletin, by Mr. Pinchot and myself is extremely flattering."<sup>18</sup> The bulletin, and work related to it, had a good deal of influence. It began with the authors putting together displays of large wood slabs from commercial tree species that were used in numerous expositions. The bulletin was among the first of state tree books to include species distribution maps. Excerpts and photographs from it were used in A. F. W. Schimper's influential book on early ecology.<sup>19</sup> It led to contract work for Ashe in 1898, about the time Pinchot became the director of the USDA Division of Forestry. Ashe signed on as a Special Agent with the division, and continued doing timber assessments and

forest inventories with the Bureau of Forestry until 1903. The NCGS bulletin was combined with other documents in the memorial to Congress, which started as a call for creating a national park in the southern Blue Ridge region and transformed into a ten year struggle to obtain permission for the federal government to purchase national forests in the eastern U. S. Much later, *Timber Trees and Forests of North Carolina* provided an important baseline for some Piedmont forest types when the NC Natural Heritage Program published its first book in 1981.<sup>20</sup>

Other formative events were occurring in 1897. The first unsuccessful attempt at creating the North Carolina Forestry Association (NCFA) occurred that year at the hands of Joseph A. Holmes and W. W. Ashe. The State Fair in October drew some interest in forestry matters, though Ashe generally had a hard time promoting the association.<sup>21</sup> This early incarnation of NCFA survived at least until 1899, when Ashe is known to have stayed on as its secretary and treasurer. At the time there were only four recognized professionally trained foresters in the country. B. E. Fernow and Carl Schenck were here from Germany, and Gifford Pinchot and Henry Graves had been trained in Europe. Other strong forestry advocates included Carl Schurz and Charles Mohr, the latter of which had just put together the bulk of a large published survey on pine timber in the southern states.<sup>22</sup> By comparison Ashe did not have a degree in forestry or European training, since he had gotten a Masters degree in botany and geology at Cornell six years before formal schools of this kind began in the United States.

Eighteen ninety-seven was also the year the Forest Management Act came into being, giving administrative authority for the management of what were initially western national forest reserves. This legislation was actually a rider attached to the Sundry Act, and it came at the end of a long process of study and debate by members of the National Forest Commission. Ashe did not participate in the formation of the Act, though he is among conservationists who made significant contributions to all three of the major clauses or tenets in the Act, including: sustained yield timber management, multiple uses (such as water, timber, mining, etc.), and the protection of selected natural areas. Few individuals worked on all three of these principles with equal emphasis, and gave natural areas the attention they deserve.

Among the most influential books Ashe collaborated with near this time were *A Message from the President of the United States* (1902) and *The Southern Appalachian Forests* (1905).<sup>23</sup> After Congressional appropriations for an investigation of the region's forests came in May 1900, Ashe began working with H. B. Ayers on a large joint contract between NCGS, the US Geological Survey, and the USDA Bureau of Forestry. Timber density maps and assessments had been done previously in association with the US Census and USGS, but the Ashe and Ayers land classification map showed more clarity and detail.<sup>24</sup> Their map was based on field work, involving the difficulties of travel on horseback in a number of major river basins in the region. Ayers had done numerous similar assessments out west and in other parts of the country, covering geology, topography, hydrology, and timber assessments. Ashe worked on timber assessments, transportation availability, and a comprehensive listing of trees and shrubs native to the region.<sup>25</sup> They did this work before timber tables were in use, and likely estimated timber volume using log rules similar to either Doyle or Scribner.

According to Henry Gannett and Charles Walcott, both with USGS in this time frame up to 1905, little was known of the condition of the region's standing timber when

assessments for *The Southern Appalachian Forests* were carried out. Ashe and Ayers were part of a team that pulled off the first comprehensive forest inventory of the southern Blue Ridge, considering some 6,400,000 acres of a 9,400,000 acre bioregion. The area they examined and mapped was smaller, at only 56% of the region. Within this examined and described area of about 5,312,000 acres, 23% had been cleared, and 77 % was in woodland - with only 7.4% of the latter considered uncut. Was this just a timber cruise stating that numerous oak species, American chestnut, and a range of other tree species that favor coves and slopes were the most valuable and abundant? Ultimately it was more than this because attention was paid to botany, forest influences on water quality, and a kind of whole-pattern land classification that stayed with Ashe the rest of his career. Numerous other publications and studies were aiming in similar directions at this time, including: Overton Price (1900), Franklin Reed for the Linville Improvement Company (1905), Walter Mulford (1905-06), and *Forest Conditions of Northern New Hampshire* (1905) by A. K. Chittenden. The Ashe and Ayers report has been used in numerous studies and books about the region, the most extensive of which appeared in geographer Isaiah Bowman's *Forest Physiography* in 1911.<sup>26</sup>

### Expanding Beyond North Carolina

After *The Southern Appalachian Forests* was completed in 1905 Ashe started working with the newly formed US Forest Service (USFS) as a Forest Expert and then as a Forest Assistant. This involved a study of forest conditions in the Potomac River Basin in Virginia.<sup>27</sup> The final report for this study contained a forest cover map and a strong echo of a statement that had been made seven years earlier by both the editors of *Forest Leaves* and the Pennsylvania Botanical Society.<sup>28</sup> The idea of a public park, or later a national forest land base, that connected high mountain ridges between reserves in Pennsylvania and those proposed in the southern Appalachians was clearly in place before Congressional permission was given to begin such purchases in 1911.

At the time the idea of eastern national forests was taking form, and then took form, Ashe was working on forestry assessments and recommendations in six out of ten southeastern states where some type of forest conservation effort had begun. His longest involvement in this regard was with North Carolina and Virginia, though after he settled into more full time work with the USFS in May 1909, he assisted in Alabama, Louisiana, Tennessee, and South Carolina. Some of this work, which involved field work and a string of finished reports, was done with state programs such as boards of agriculture or state geological surveys. Much of it was paid for by the USFS which offered cooperative extensions to numerous states at that time. In accord with these early conservation efforts, many of the states mentioned above were quick to pass enabling legislation that gave permission for the establishment of national forests within their boundaries. This wave of work ended in October 1914.

In full context, W. W. Ashe was the earliest in a group of five geologist-botanist-foresters who began their work in relation to state geological surveys. Others who followed this pattern started with John C. Gifford (New Jersey 1894), Roland M. Harper (Georgia 1896 and 1903), Fred W. Besley (Maryland 1906), and Alonzo B. Brooks (West Virginia 1910). All of the above were preceded in this kind of endeavor by Joseph T. Rothrock of Pennsylvania and George Sudworth who visited western North Carolina in the summer of 1890 as an employee of the USDA Division of Forestry.

## Three Branches of the US Forest Service

### Land Acquisitions

Ashe's quarter century involvement with the US Forest Service can be summarized in terms of the three divisions of the agency to which he made contributions. By far his greatest efforts were in the Division of Lands. This division dealt largely with acquisitions, and individuals working there studied lands potentially suitable for purchase as national forests in the context of surrounding private lands. The Agricultural Appropriations Act of August 10, 1912 directed the Secretary of Agriculture to select, classify, and segregate lands that could become national forests. This was an integrated approach because it involved assessing and classifying nearby timber lands, lands that would be more suitable for agriculture, and marginal farm lands with particular attention to soil erosion issues.

Ashe became one of the primary architects of the eastern national forest land base largely by sticking with bureaucratic processes in the National Forest Reservation Commission for 20 years.<sup>29</sup> The process of land acquisitions was partially publicized, though it was mainly done behind-the-scenes. It involved extensive field work, organizing work crews, and a significant amount of desk work. Each tract of land up for consideration had to be approved by a long list of government officials, the Chief of the US Forest Service, and the US Geological Survey (mainly related to protecting the headwaters of navigable rivers). Three major veins of work had to come together for each tract, including: the legal paper work of land titles, specific land surveys to map boundaries and determine acreages, and forest assessments to find the value and condition of timberlands (i.e. the price per acre). Ashe was involved with field work, and later organizing crews, to determine the latter. Methods of carrying this out improved as the process progressed, with assessments for each tract being done by two qualified individuals, and timber cruising methods being checked by outside agents.<sup>30</sup>

One of the more thorough and illuminating articles Ashe wrote for the Society of American Foresters appeared in March 1917, as the *Journal of Forestry* began. It was titled "Some Problems in Appalachian Timber Appraisal," and he emphasized the need for accurate timber appraisal techniques and experienced personnel in the USFS. Ashe recognized problems related to keeping qualified timber cruisers at work in the land acquisitions process in the region. The difficulty in carrying out these timber volume inventories and stumpage appraisals is reflected in the following quote from the same article. Ashe stated, "Using the strip method as the basis of volumetric survey, it is safe to say that it requires two years for an untrained man, forest school graduate or otherwise, to qualify as an accurate cruiser, and even in this time unless he is adapted to the work and gives conscientious application his results show only a fair degree of accuracy."<sup>31</sup>

Ashe's knowledge of the monetary value of timber lands in his time was usually not questioned by E. A. Sherman, his supervisor in the division. Ashe developed a reputation for being frugal with regard to land purchases for national forests in the east, and in this way his recommendations helped save the US Government thousands of dollars annually. An important overview of the condition of national forest lands in most of the eastern United States can be found in his last article, which was published in *Southern Lumberman*.<sup>32</sup> The following figures go up to June 1931, a time when Congressional appropriations for land acquisitions faltered significantly due to the Great Depression. With a total of 3,989,287

acres of national forests in the east (excluding the Lake States), lands in named purchase units were categorized as being 23% uncut or minimally culled, 53% recently cut-over or heavily culled, 14% cut-over as abandoned fields, 7.5% barren lands that had been burned and needed tree planting, and 2.5% abandoned farm lands.

Through the 1920s and toward the end of his career Ashe made some keen observations about problems he encountered while working in the southeast, writing about it both publicly and privately. One close colleague in the USFS, J. C. Kircher, noted that “His wide knowledge and breadth of information respecting conditions in the south made him a logical man to determine the best locations for the purchase units.”<sup>33</sup> Insightful comments about these conditions were found in a letter from Ashe to his father, dated January 1932, where he stated “There will soon be nothing left of the south that the local people own unless the owners of local properties live close enough during times like this to finance and protect their properties and investments. My guess is that each of the poverty stricken southern states has lost not less than [a] billion dollars of its property to northern investors during the past two years, and the end is not yet in sight.”<sup>34</sup>

A significant climax in Ashe’s land assessment career came in 1931 when he applied for a grant from the Charles Lathrop Pack Forest Education Board to do a year’s worth of holistic land classification in the lower Mississippi River Basin.<sup>35</sup> He and others in the USFS had officially started this kind of classification in the basin after the big flood of 1927.<sup>36</sup> The grant would have involved assessing marginal and sub-marginal farm lands, along with lands that may have been more suitable for growing timber both for erosion control and as a source of income. Ashe had solid contacts with foresters in twelve southeastern states. He also had contacts with people in relevant departments of universities in the area. The Pack grant proposal marked a clear effort to branch out beyond the agency, though Ashe died before hearing if the money was granted. In the end it did not come to pass. Mechanical approaches to flood control involving dams and reservoirs, as proposed by the Corps of Engineers, won out over more organic approaches proposed by Ashe and others in the early US Forest Service.

Research also revealed that Ashe had chaired the Committee of Bureau’s of USDA for two years in the latter part of his career. This committee studied four million acres in the lower Mississippi River Valley, and started a process of land classifications and proposed alternatives to reservoirs. These proposed alternatives would have used existing forests and reforestation as a means of curbing flood events and soil erosion. Ashe’s placement as chair of this committee was due in part to numerous bulletins and articles he had put together in the 1920s, dealing with forest influences on reservoirs.<sup>37</sup>

Controversial topics came up with issues of land utilization spurred by the great flood of the Mississippi River Basin. The USGS essentially abandoned its work with forest influences on water flow after the flood. Tensions between land uses for cash crops like cotton, and the potential for growing timber, emerged repeatedly. Some, like Ashe, thought growing timber would encourage cellulose oriented industries like Rayon. He had been aware of the relationship between textiles, timber, power generation, and flooding as far back as 1908. As a continuation of these ideas, Ashe wrote two articles specifically related to cotton and the potential for converting marginal farmlands to timber production by 1930 and 1931. One of these articles challenged the narrow concerns of individual property rights related to soil erosion.<sup>38</sup> He also worked on two articles related to this topic that never got published, one having the provisional title “King Cotton and Queen Rayon: Is Rayon to

Replace Cotton”. He met stiff criticism from Roland M. Harper for his published article titled *Marginal Land and Cotton Prices*. Roland was a native of Maine, but most of his work was done in the south related to plant geography, forestry, systematic botany, economic botany, and human demography. Ashe’s article on cotton prices was very thorough, though Harper saw it as a departure from previous land acquisitions work. Harper did not see planting trees in abandoned cotton fields as being practical, and thought crops brought in more money to farmers than timber. Ashe had neglected to mention problems with the boll-weevil, which had been a primary reason for cotton fields being abandoned in Georgia. Soils on many of these farms were exhausted, though they were also being planted in peanuts, peaches, hay, and pasture. Harper had dealt with these same issues in a bulletin concerning the natural resources of Georgia two years earlier.<sup>39</sup>

By far the most important extension of early work in land acquisitions came with plans to set aside additional national forests in the east. Ashe participated in this before his death, but it was largely carried out by his successor, Leon Kneipp, and others in the division. These plans grew to a limited extent after the Copeland Report was published, and the FDR administration came into office.<sup>40</sup> The Copeland Report had been prepared by the US Forest Service under the direction of Earle Clapp, and it was a comprehensive reassessment of forestry conditions on public and private lands in the United States during the Great Depression. It had roots stretching back to 1926 when Clapp had put together *A National Program of Forest Research* with Charles L. Pack’s American Tree Association. Specific maps of land acquisition plans that stemmed from the Copeland Report were found in the cartography section of the National Archive II in College Park, MD.<sup>41</sup>

Other records created by the Division of Lands have provided deeper insights into parts of the environmental history of the southern Blue Ridge region. At least sixteen reports, maps, and related articles have aided in a better understanding of the extent of primary forests on a set of specific forested tracts in the region. These primary forests tend to show the least sign of human modification. A related find took the form of a 1939 USDA Bureau of Agricultural Economics map that depicts areas of most-to-least human population density in the southern Appalachians. It is based on 1930 census data and provides many correlations with uncut sections of mountain ranges that have been confirmed on the ground through field work.<sup>42</sup> Related maps, with very similar information, were produced by the Conservation Trust for North Carolina in 2007. These maps depict changes in housing density for western North Carolina, starting in 1940.

Echoes of past efforts to assess land ownership and forest cover in the south came in May 2011 with the release of a three-year multidisciplinary report from the Southern Forest Futures Project. Their findings have put many things in perspective. Only 40% of the land base of the south is currently in forests and 90% of this is owned by corporations, families, and private land owners. The multigenerational process of setting aside public lands to hopefully provide better stewardship and management has added up to only 10% of current forestlands in the south. The project estimates that 23 million acres of southern forestland could be lost to urbanization, population growth, lumbering, diseases, and invasive species in the next fifty years.

## Division of Research

W. W. Ashe was involved with forest and timber production research from the time the Division of Research began under the leadership of Earle Clapp in June 1915. The process of forest assessments, as described above with the Division of Lands, was establishing itself at this time, but it ran headlong into conflict with more mechanical or production-oriented approaches that came to dominate the divisions of research and silviculture in the southern Appalachians by 1920.<sup>43</sup> This is a central dichotomy in the history of the early US Forest Service related to this region, and it has since been largely forgotten.

The Appalachian Forest Experiment Station began when William Greeley was chief of the agency in the early 1920s. A wide range of research topics were covered by investigators at the station.<sup>44</sup> Numerous people who had risen to relatively high positions in the agency at that time (such as Earl H. Frothingham, Inman Eldredge, E. J. Hanzlick and others) were strong proponents of German-oriented agro-forestry methods. These methods relied heavily on commodity extraction, artificial compartment and stand boundaries, and volume tables to assess timber yields. Ashe and others in the Division of Lands had previously applied a more ecological approach to assessing forest tracts being considered for acquisition into the national forest system. This approach had roots in work Ashe did with NCGS, and it was accepted in an official publication of the Secretary of Agriculture as early as 1908. One of the terms used to describe this method is Orographic Typing, since it relies on topographic features of mountains such as main ridges, ridge slopes, slopes, and coves. The different physical environments found in these topographic positions were used as a basis for determining the value of forested lands, as well as potential timber yields.<sup>45</sup>

An excellent example of the Orographic Typing method can be found in a *Journal of Forestry* article titled “The Basis for Subdividing Mountainous Forests for the Purpose of Management” by S. A. Wilde and H. F. Scholz (December 1930).<sup>46</sup> It contrasts mechanical or agricultural Germanic approaches and more ecological or geographically oriented approaches in a very concise way. Raphael Zon was one of the main reviewers of this article, and at the time he was directing the Lake States Forest Experiment Station. Another researcher of note during this period was Harold Lutz. He worked with the USFS at the Allegheny Forest Experiment Station in Pennsylvania, and he had become a proponent of investigating natural forest processes as a way of forming a distinctly American silviculture.<sup>47</sup>

Another split emerged between Ashe and forestry research efforts that occurred in the 1920s. He had put together a thoroughly reviewed article on “Forest Types of the Appalachians and White Mountains,” which was printed in the *Journal of the Elisha Mitchell Scientific Society* in March 1922. The article was used as a reference by the Society of American Foresters, Committee on Forest Type Classification (Southern Appalachian Section), and they published their formal classification in 1926.<sup>48</sup> However, the committee’s work was less ecological in character than the article Ashe had produced some four years earlier. Their intent was to create a forest typing scheme that was simple enough to be used by practitioners with limited skills, one that would not bog down in ecological complexities. The committee thus crafted a simplified scheme that used one or two commercial tree species to define the type. This pattern of reductionism remains in place today, and becomes evident

when one compares SAF forest typing schemes with more ecologically comprehensive work done by the NC Natural Heritage Program or the Nature Conservancy.

For all their differences, Ashe and Frothingham did at least see the need to set aside some primary forests as part of the research process early on in the history of the Appalachian Forest Experiment Station. In a landmark 1922 article that was subsequently referenced in numerous works related to research natural areas, Ashe stated “However woefully deficient the practice of American silviculture may be at present, it is not without hope, but the fulfillment of that hope though deferred will in large measure depend upon the knowledge of the original forest types of a [given] region.”<sup>49</sup> Just two years after this Frothingham gave a thorough account of plans for the research station at a dedication exercise at the Yale School of Forestry. He stated “As soon as possible, thorough ecological studies should be undertaken, and for this purpose the need of natural areas of virgin timber, to serve as standards for silviculture and ecology is emphatic.”<sup>50</sup> This kind of work by Ashe, L. G. Romell, and others prior to the formation of organizations like the Wilderness Society deserves more light. Though contemporary ecologists like Daniel Botkin have called for more baselines in measuring our actions and developing management strategies, he did not do much to recognize the intermediate roots of this work that were undoubtedly crystallizing by the 1920s.<sup>51</sup>

### Division of Silviculture

In general William W. Ashe was not a manager of timber sales or working circles, though he did write a plan for logging units in February 1916 that sounds every bit as detailed as those made by other silviculturists in the agency.<sup>52</sup> He is known to have worked on detailed timber management plans in Louisiana, Alabama, Arkansas, and Kentucky in the course of his career. However, his most significant contribution to silviculture can be found in a range of six bulletins about specific tree species and their characteristics that were produced from 1907 to 1915. He did background work and wrote or co-wrote bulletins for white oak, chestnut oak, American chestnut, shortleaf pine, yellow poplar, and loblolly pine.<sup>53</sup> The bulletins helped fill important gaps in knowledge about species characteristics, since only a few intensive studies of this kind had been done prior to 1907. His bulletins were part of a set that additionally covered southern cypress, the ashes, and Earl Frothingham’s important work on eastern hemlock and northern hardwoods.

The most important timber tree study that Ashe participated in was the bulletin on loblolly pine.<sup>54</sup> It documented a wide range of topics related to the species, including: growing conditions, variations on root systems, growth ring characteristics, maximum known diameter, geographic distribution, and yield. Austin Cary commented on the thoroughness of the document on two different occasions, and wrote that each time he consulted the bulletin he found what he was looking for. Ashe had been working on the normal yield capacity of loblolly pine from his early days with NCGS. For a period of four months prior to 1913, he supervised a crew of men who assessed yields of this tree in eastern NC. Austin Cary found substantial agreement with figures this crew came up with in a manuscript report he did for the USFS related to a 1930 forest survey.<sup>55</sup> The loblolly pine bulletin laid the technical foundations for two important subsequent works on the ecology, culture, and management of the species by Wahlenberg (1960) and Schultz (1997).

Over the span of a little over two decades Ashe wrote numerous articles, bulletins, and management plans that demonstrated ways timber operations could prevent waste and move toward sustained yield practices. These contributions were based largely on empirical studies done by himself or coworkers at logging operations. An important article that set the stage for Ashe's investigations of this kind was published by the Society of American Foresters in *Forestry Quarterly* in September 1916. It was titled "Cost of Logging Large and Small Timber" and it provided much on-the-ground data.<sup>56</sup> His research into, and advocacy of, many forms of wood use was formally recognized by his colleagues in both the US Forest Service and the Georgia Forest Service. This included a keen interest in cellulose in the early part of the Great Depression.<sup>57</sup>

### Contributions to Botany

William W. Ashe was a tireless collector and investigator of woody plants, some grasses, and some herbs in numerous parts of eastern North America. These investigations often occurred in obscure locations. His extensive travels and botanizing efforts are now known to have covered every state in the eastern U. S. except Rhode Island and Connecticut. This is based on location searches in the long record of botanical articles he left behind. Judging from correspondence in archives, it is clear he did a great deal of networking with numerous individuals to locate plants or to fill gaps related to existing ones. Linnaeus is known to have employed similar strategies in his efforts to understand the natural system of the distribution of plants.<sup>58</sup> Ashe even enlisted the help of Donald C. Peattie, who was traveling through Europe in 1931.<sup>59</sup> This is a part of the world Ashe is not known to have visited.

Ashe made numerous botanical discoveries, though only thirty-nine of the plants he listed are currently accepted as species by botanists. This is a relatively small number compared to the tens-of-thousands of plants he collected over four decades. Among the tree species that botanists have accepted are three species of oak (*Quercus*), two species of hickory (*Carya*), one species of magnolia, one species of juniper (*Juniperus*), and one species of sumac (*Rhus*). There are seventeen species of hawthorn (*Crataegus*), seven of which are considered northeastern species.<sup>60</sup> Of the shrubs there is rabbiteye blueberry (*Vaccinium*) and a viburnum. Of the grasses there are nine species of rosette grasses (*Dicanthelium*). Of the herbs there are two species of heartleaf (*Hexastylis*) and one species of calamint (*Clinopodium*). Many of these species are eponyms, meaning they were listed by Ashe and then named after him by other botanists.

W. W. Ashe had a long direct and indirect relationship with the UNC Herbarium. When the herbarium started in 1908 William Coker had, among the initial specimen sheets, a hundred or more that had been collected by Leander W. Lynch and Ashe.<sup>61</sup> Lynch attended the University of North Carolina prior to Ashe, and had studied and collected plants in his hometown and in the Chapel Hill area in 1886-87. He left the university after his junior year, before receiving a degree.<sup>62</sup> Ashe followed the pattern of collecting plants in the Chapel Hill area, initiating many outings during his student years at UNC. He and Coker had much in common, and maintained a long friendship. They worked together on many projects related to dendrology, and on articles that appeared in the *Journal of the Elisha Mitchell Scientific Society*. When Ashe died relatively suddenly in March 1932, a concerted effort was made to get his collected specimens placed at UNC, though there were a number of herbariums who

took an interest in the collection. By 1933 the material was secured at the UNC Herbarium through a generous donation by George W. Hill. Soon after the acquisition numerous workers at the herbarium began sorting through over 30,000 dried specimens that had accumulated both in Raleigh, NC and Washington, DC. Some specimens were poorly labeled and were later discarded.

Many of Ashe's discoveries that were later listed as species date back to his first round of botanical work known as "Contributions From My Herbarium." This series was published in seven different journals from 1894 to 1904. There were fifteen official entries in the CFMH series, along with twelve supporting ones. One of his papers on hickories from this era was informally 'published' when it was read at an official meeting of the Elisha Mitchell Scientific Society in April 1896. Potentially new listings of wild ginger, grasses, and hawthorns were among the plants Ashe described in the series. In many cases it took decades for these plants to settle into clear taxonomic placement.

Though Ashe was an excellent systematic botanist it is not known what his exact position was on the topic of biological evolution. His father, and likely others in the Ashe family, took a position against it in the mid-1920s.<sup>63</sup> William wrote an article in the *Washington Christian Advocate* in 1925 titled "And the Earth Brought Forth the Tree and God Saw That It Was Good," which gives some idea of his leanings, though it concentrates more on forest management topics. Despite the lack of information about William's position regarding a Darwinian world view, he was tolerant of others who favored it, like B. W. Wells. Ashe corresponded and worked with Wells, mostly in connection with the NC Academy of Science. This was an organization Ashe helped found in 1901.

### Ecological Work

It is difficult to know exactly when W. W. Ashe started paying attention to uncut forests in western North Carolina, yet it is clear from assembling material related to this subject that he and Joseph A. Holmes were aware of these forests from the time NCGS formed. Ashe mentioned them in his Masters thesis of 1892, and in his first article the following year. He made this statement in the well received *Timber Trees and Forests of North Carolina*, "About one-third of the area originally occupied by these [higher mountain] forests is now under tillage or in meadow; the rest is more nearly virgin than any other considerable extent of forest to be found in this State." In an early phase of the Appalachian National Park Association, the American Forestry Association and the American Association for the Advancement of Science endorsed the idea of creating a southern forest park in the region. The reason given for action in this regard in May 1900 was "...the importance of the preservation in its original condition of some portion of the hardwood forests of the Southern Appalachian region...".<sup>64</sup> By January 1901, emphasis had shifted toward a national forest reserve instead.

At this time Ashe was corresponding with Henry Cowles of the University of Chicago. Henry had been studying the ecology of sand dunes in the lake states, and later forest conditions in east Tennessee. By March 1901 Cowles had sent a request to Ashe for a copy of *Timber Trees and Forests of North Carolina* and hoped to keep up an exchange of papers "from time to time". In 1902 John Harshberger, an ecologist from Pennsylvania, made a long visit to the mountainous section of North Carolina and wrote extensively about it in a two-part article the following year.<sup>65</sup> Harshberger referenced the same bulletin

mentioned above in relation to soils, and he repeated terms for three climatically defined life zones that were in use at the time. John also listed four ecological formations in the region, based primarily on climatic, soil moisture, and light conditions that affect vegetative growth. These were Mixed Deciduous forest, Coniferous forest, Sub-alpine Dwarf Tree-shrub, and Treeless formations. Harshberger later referenced Ashe's work numerous times in his *Phytogeographic Survey of North America* (1911).

Forest advocates were aware of primary forests as early as 1905, when the USFS formed. Gifford Pinchot recognized the need for some protection forests, which were associated with clean water found in mountain headwater areas.<sup>66</sup> *The Southern Appalachian Forests* is layered with descriptions of difficult access and uncut parts of mountain ranges such as the Smoky Mountains, the Unicoi and Unaka Mountains, the Black Mountains, the upper Catawba River Basin, and parts of the southern Blue Ridge escarpment among others. The English version of A. F. W. Schimper's standard ecological text was available at this time. It contained forest photos and descriptions from both W. W. Ashe and J. T. Rothrock of Pennsylvania.

One of the most outspoken advocates for setting aside natural areas at the time was George F. Schwarz. He hailed from Massachusetts, and was both a member of the Society of American Foresters and a Forest Assistant with the USFS. In June 1905 he eloquently stated "...it might be of much practical value in the development of future systems of forest management, if selected areas of purely virgin forest could be maintained in that condition for purposes of study and comparison."<sup>67</sup> He also prophetically saw that "Our national forest reserves are still to a large extent in a wild, natural state, and it will be many years, in fact, before they shall have become impressed with the stamp of artificiality." Viewpoints opposite to Schwarz can be found in shorts by editors of *The Forester* in August 1901 titled "Love of Age in Forests" and "An Example of the Scenery-lover's Mistake."

William W. Ashe was part of an undercurrent of botanically and ecologically inspired work that occurred in numerous creative phases of the early USFS. The most important contributions he should be remembered for concern Research Natural Areas (RNA's) and collaboration with the Ecological Society of America. In 1916, just after the research division of the agency started, Ashe took a trip with his friend Verne Rhoades, who was the first supervisor of Pisgah National Forest. He was continuing a process of noting significant forested areas in the southern Blue Ridge, ones that may be suitable for RNA's or set-asides that would preserve "characteristic forest types unaltered by human agencies."<sup>68</sup> An opportunity for one of these set-asides had come up in the land acquisitions process in the Black Mountains the year before, though the land was not purchased and timber on the tract was removed. Later, on March 8, 1921, Ashe sent letters of inquiry to the first supervisors of national forests in the east requesting information about potential RNA's. A little over one week later the Committee for the Preservation of Natural Conditions, chaired by Victor Shelford of the Ecological Society of America, put out a call for listings of natural areas in the journal *Science*.<sup>69</sup> These efforts lead to the *Naturalist's Guide to the Americas* that was published five years later. Ashe contributed an essay to this book on the value of having natural areas as baselines in silviculture. He may have sent the letters of inquiry to the first supervisors from his own initiative. He may have also heard about the call for natural areas through the society, or possibly through the National Research Council. This council had considered the topic, but handed it off to the society in 1920.

The result of Ashe's queries of national forest supervisors, and his own listings, lead to the groundbreaking "Reserved Areas of Principle Forest Types as a Guide in Developing an American Silviculture", which was published in the *Journal of Forestry* in March 1922. His comprehensive article on forest types appeared at the exact same time. The ecology of his day was based on climax models, which have roots in work of the German botanist C. G. O. Drude (1896). The idea of permanent forest types has since atrophied, though the need to understand natural forest processes has not.

Other work on natural areas at the time included Arrhenius on island biogeography, Benton Mackaye on a proposed Appalachian Trail, Aldo Leopold on wilderness and recreation policy, Caroline Dormon on conservation education within the Louisiana Forestry Division, Arthur Carhart on a recreation plan for the Superior National Forest that included wilderness, Livingston and Shreve on the distribution of plants in the U. S., John Harshberger on natural areas in Pennsylvania, and G. A. Pearson on protecting natural areas near the Fort Valley Experiment Station out west.

Ashe took an interest in proposed state parks in this period. This included aesthetic concerns, and the idea of protecting some natural areas for their own sake - beyond their importance to silviculture. A good deal of interest had stirred in 1922 related to the idea of creating a state park in Linville Gorge. This was before the gorge had come under any kind of protection. Ashe took a trip through the area that June, and by January of the following year he had produced an article that appeared in *Parks and Recreation* magazine. His first paragraph is perhaps the most lyrical of his writings that appear in print:

"Far below a slender thread of sparking, roaring water, walled in by lofty sandstone cliffs which rise from sloping bouldered bases, dotted with mountain pine with nodding tips; deep somber hollows, shady with hemlock; high above, sentinel-like, towers Table Rock, cleft in twain in some titanic swell, and Hawksbill ominous; a turquoise haze hangs above; now and then is heard the shrill cry of a raven. This is Linville Gorge."

Later that year, in the same publication, a paper of his was reproduced that had been presented at a meeting of the Louisiana State Park Association. It revealed how the aesthetics of an old forest had moved him, and how the details of it had seared into his mind. The forest had since been wiped away for the development of a city, and he used it as an analogy for why some forested areas need to become parks. He distinguished between the utility of forests, and parks which he saw as places of enjoyment.

In May of 1925 William Coker wrote to Ashe, after having been appointed to a committee of the NC Academy of Science to reserve parks and ecological areas in the state.<sup>70</sup> He stated "It occurs to me that you are the one who probably knows more about this matter than any other man..." and asked for sites in NC, VA, and SC. Ashe responded promptly and expressed dismay that he had few areas to offer. Among places he listed and imagined were Mt. Mitchell State Park, areas near Wilmington, Chapel Hill, Swain County, the vicinity of Highlands, a possible longleaf pine area, and Linville Gorge or Grandfather Mountain. The latter had been included in a recent study for consideration as a national park by the Southern Appalachian National Park Committee.<sup>71</sup> Ashe's response hints that his efforts to get the USFS to set aside some natural areas with specific forest types had been successful, though he faced an uphill battle from utilitarian interests in the Department of Agriculture. The secretary of the department at the time, Henry C. Wallace, did not think the southern Blue Ridge region was suitable for a national park, and he made inaccurate statements about the size and extent of existing old growth forest areas.<sup>72</sup>

The best example of Ashe being interested in natural areas for their own sake came in May 1926 when he wrote a short paper for the magazine of the Wild Flower Preservation Society. Annette Braun, sister of the famous E. Lucy Braun, had written Ashe numerous times requesting that he give a lecture to the Cincinnati chapter of the organization. Ashe was too busy to attend, but his paper stated, in typical wordy fashion “The motive which actuates the Society for the Preservation of Wild Flowers finds a sympathetic response among those who would like to see areas of forest kept in their original condition, held as vestigial units, to preserve traces of the ever vanishing forest primeval, not only the trees but the entire forest life.” He went on to show how little was known about relationships between “the biotic reactions of the soil”, or trees that contribute both beneficial and toxic elements to the soil, or herbs that can have specific habitat requirements. He was aware that some wild flowers with restricted habitats can be lost “unless the forest conditions under which they thrive can be preserved and maintained.”<sup>73</sup>

W. W. Ashe was an advocate of the L-20 Regulation, and he was likely among its architects. This was a USFS policy of 1929 that formally recognized the existence of primitive areas on national forest lands. The regulation did not, however, have the weight of law. It did not propose minimum sizes for these primitive areas, or prevent developments such as road building. The Heart’s Content purchase in the Allegheny National Forest of Pennsylvania was to be the first of a number of Research Natural Areas (RNA’s) that would be set aside by the National Forest Reservation Commission and the USFS. This 110 acre tract of uncut white pine forest fetched a high price, and it was among few intact remnants of this type remaining in the Mid-Atlantic States. Ashe stated that “There should be, and eventually must be on the national forests, a similar natural laboratory in each of the important forest types of the United States for the study of the fundamental factors which control the type.”<sup>74</sup> Another outspoken advocate in this regard was L. G. Romell, a professor of Forest Soils at Cornell University who had worked in Europe and saw the need to connect soil science and silviculture in the United States. He prophetically called for surveys to find new RNA’s, expanding beyond known areas of old growth, before Bob Marshall stated the same explicitly in the Copeland Report in 1933.<sup>75</sup> The most concrete result of the L-20 regulation in the eastern U. S. was the establishment of ten RNA’s and Experimental Forests in the decade leading up to 1940. Linville Gorge was among these kinds of federal acquisitions in 1938.

Two letters late in Ashe’s career show the depth of his interest in ecology. In October 1931 Ashe responded to Professor Delzie Demaree who had been doing extensive botanical work in the Ozark region of Arkansas. Ashe stated that the USFS did not make listings of plants found on national forest lands at that time, except for western states in relation to grazing issues. This means that much of the botanical work Ashe did for twenty-five years in the agency was done on his own time, from his own initiative, and outside the official duties of his job. He showed his allegiance to biogeography by stating to Demaree that “county lists are not a desirable basis for a floral unit of description or treatment.”<sup>76</sup> He pointed to the example of another botanist, likely C. Merrin Palmer, who had done work in the Ozark and Hot Springs areas using geographic units as the basis of description. Most revealing was a response to Harold W. Pretz of Allentown, PA just two months before Ashe died. Pretz was interested in the distribution of plant species, and the forest typing work Ashe had done about a decade earlier. Ashe referenced Harshberger (1911) and Schimper (1903) as standards Pretz should consult. He mentioned the recent Heart’s Content purchase, and stated “A large

number of areas representing many different forest types have been set aside upon other forests. No record has as yet been published of these.” He estimated it would be several years before listings of selected natural areas would be done, and that they would be accessible mainly to investigators, not for recreational purposes. The Middle Creek RNA was officially set aside in the Black Mountains of NC in October of 1933, after over a year of assessments and going through a number of procedures.<sup>77</sup>

### Environmental History

Ashe and some of his colleagues occupy a place in early forest conservation efforts that predate the New Deal, the Wilderness Society, and the often bitter debates that came with modern environmentalism after World War II. His perspective can be summarized by seeing forestry practices in a geological context. Much of this multi-faceted perspective revolved around the unity of rock, soil, water, vegetation, and climate considerations prior to significant changes that caused the US Geological Survey to change direction and splinter into a wide range of specialties after 1927. An example of this early integrated view can be seen in the visual symbol USGS used in the early 1900s. Benjamin R. Cohen is a researcher who shares some of these insights, and he has pointed out that there was an important second wave of state geological survey work in the late 1800s and early 1900s. He also made the following surgically accurate statement in 2006 “State scientific surveys are unexplored territory in environmental history, an oversight made more glaring since these projects were rich in their assumptions, methods, and legacies.”<sup>78</sup>

Phillip J. Pauly has stated that Harvard University was the center of a network of plant and animal collectors in the U. S. prior to the Civil War.<sup>79</sup> This focus shifted to Washington, DC and federal agencies located there after the war, and the story of Ashe’s career certainly follows this trend. Pauly also brings up the specialized and more restrictive peer-reviewed academic environment that emerged in the late 1800s and early 1900s. It is important that Ashe and a few others like him were able to maintain a broad perspective within a federal agency in the context of these changes. Ashe’s career can be seen as a kind of bridge between more informal botanists and naturalists that often came from Europe, American traditions in biology that emerged at Harvard, and the wave of practitioners that could take advantage of more easily accessible transportation like R. M. Harper, John K. Small, and John Harshberger.<sup>80</sup> The far end of this spectrum can be seen by contrasting Ashe’s career with that of Wilber H. Duncan. Wilber was an organized systematic botanist who was able to specialize and keep his botanical work in very clear order, where Ashe was pulled in many directions and was not able to keep a practice this concise.

As Gerald Allen has stated, the history of ecology follows a trajectory from early descriptive phases to more quantitative and experimental phases in the 1900s.<sup>81</sup> Ashe’s story provides an example of the more holistic side of this history, in contrast with more analytical and reductionist approaches that dominated most of the twentieth century. His experience also adds dimension to dynamics elaborated on by Sharon Kingsland in *The Evolution of American Ecology, 1890-2000*. Radical changes in taxonomic practice were clearly occurring in Ashe’s time. He was involved in some of the stiff critical debates related to plants that had difficult placement, such as grasses and hawthorns. In 1910 he took a reasonable position on hawthorns when five questions were posed to a set of leading researchers who had studied the genus.<sup>82</sup> Ashe was between being a lumpener and a splitter in

this taxonomy, and he recognized the need to get more proof in order to draw conclusions. He was aware of the issue of mutation and hybridization in hawthorns, and stated this condition may be similar to that of some oak species.

The Division of Lands within the US Forest Service continued to do innovative work related to ecological topics as the New Deal progressed. After having written articles related to an acquisition renaissance, Assistant Forester Leon Kneipp received a letter from Robert S. Yard in December 1934.<sup>83</sup> Yard was still the executive secretary of the National Parks Association, and he went on to become a founding member of the Wilderness Society (TWS). He asked a set of questions concerning the amount of forest lands in the U. S., their condition, and areas that may have virgin forests. These questions came about two months after an important meeting among four other founding members of TWS, after they had recently taken a trip to a CCC camp near Knoxville, TN. Kneipp responded with definitions of old growth forests, and a figure of 98,855,000 acres for the amount of old growth he thought was left in the country at the time. This estimate has been corroborated by Joseph S. Illick who wrote about the general forest situation a year later in 1935.<sup>84</sup> Kneipp did not provide methods for how this figure was derived, though 27% of it was listed for the eastern U. S., and over half of this relatively low percentage was in the south at that time.

The most innovative project the Division of Forest Land Planning accomplished was a Wildland Study in 1937.<sup>85</sup> It was a rough county by county tally of wildlands in four categories from zero to twenty-five percent, and so on, up to one-hundred percent. The study emphasized the need to purchase and preserve wildlands, on the part of numerous government entities and interested citizens. Elaborate stippled and delineated maps were generated using the collected data. Concentrations of uncut forests and less humanly modified areas show up clearly, some of which remain to this day.

This creative period of the mid-1930s also contained a call for an environmental history discipline by an ecologist of Ashe's generation named Charles C. Adams. In July 1938, in a comment in the journal *Ecology*, he saw the need for a "...fresh integration of the biological and social sciences."<sup>86</sup> Neil M. Maher has provided a context for these innovations in *Nature's New Deal*, pointing out the range of responses to a wave of natural and man-made disasters that lead to a number of New Deal policies. The early conservation work of Ashe and some of his colleagues contributed to plans for continued public land acquisitions, soil conservation, and awareness of the need to protect some primary forests. This was part of a foundation that some New Deal policies, and new organizations of the time, were able to build on.

Conflict between commodity perspectives in wood products industries, and more ecological approaches to forest care and management have been at the core of debates about forestry practices through many eras of conservation history going back at least to the 1890s. Samuel P. Hays has explained the dominance of the prior, and attempts by many individuals and organizations to accomplish the latter, in his book titled *Wars in the Woods: The Rise of Ecological Forestry in America*. Ashe's story adds to this by bringing awareness to the post-Progressive 1920s, and the rounds of conflict and debate that did much to shape the early US Forest Service. In 1929 Charles L. Pack and Tom Gill framed the tension between natural forest processes (which have competitive and cooperative elements) and artificial or imposed conditions in their book *Forests and Mankind*. Ghosts of this tension remain. Ashe was clearly North Carolina's first forester though he is not recognized as such by the NC Forest Service due to a lack of formal degrees in commodity-oriented institutions. Ecologists, field

work practitioners, some environmental historians, and some archeologists recognize a gradient of human modifications in the topographically diverse southern Blue Ridge region, though others like logging historians, champions of industry, and railroad history buffs frequently do not. The myth that the Biltmore Estate was the seat of all relevant forestry work in the region is contrasted by the discovery that Ashe, with his obvious American perspectives, had friendships and working relationships with numerous individuals who worked there over a twenty-three year period.

The widest conflict that historians of the US Forest Service have pointed out relates to changes that came during and after World War II. Numerous employees who worked in the agency prior to the war had either stepped away or perished. The shift, from earlier practices that included innovative forestry research and acquisition projects, toward more industrial logging practices is at the heart of many conflicts that precipitated the environmental movement. The agency had an elitist view toward those outside their professional circles from the beginning, though this intensified after the war. The changes that occurred during and after this period are well documented by David Clary (1986), Paul Hirt (1994), and Patricia Limerick (2002).<sup>87</sup>

W. W. Ashe had an evident sense of humor and was highly regarded by his colleagues and coworkers. Among statements made by those who knew him personally one tends to stand out. A three-person committee who wrote an obituary about Ashe for the NC Academy of Science stated “He was a man of transparent honesty, unselfish devotion to duty, happy and cheerful in his own work, and always appreciative of the work of others.”<sup>88</sup>

Footnotes for William Willard Ashe and the Acquisition of National Forests in the Eastern United States by Robert E. Messick Jr. May 2012:

1 – Charles D. Smith, “The Appalachian National Park Movement 1885-1901,” *North Carolina Historical Review*, January 1960.

2 – The southern Blue Ridge region is composed of 9,400,000 acres and 3,140,139 acres (or 33.4%) is in five national forests and two national parks.

3 – Two early USFS employees offer perspective on this issue: Alfred Gaskill, “Silviculture Applied to Virgin Forest Conditions”, March 12, 1903 (published in the *Proceedings of the Society of American Foresters*, May 1905) and Henry S. Graves, “Condition of American Silviculture,” *Proceedings of the Society of American Foresters*, October 1908.

4 – A complete history of the variety of positions Ashe held has been assembled. Available materials on him fall into three distinct periods covering the time he was alive, a period after his death (from 1932 to 1946), and material from 1946 to the present.

5 – Aldo Leopold served in the agency from July 1909 to June 1928 (Meine, 1988). Gifford Pinchot was in the agency less than five years, from June 1905 to January 1910. Pinchot had been a Chief of the Division of Forestry (starting in 1898), and served in this capacity with the Bureau of Forestry before the Service began.

6 – Frank B. Vinson, “Conservation and the South 1890-1920,” University of Georgia PhD Dissertation, 1971, pages 39 and 332.

7 - Wilbur R. Mattoon (compiler), “Symposium of Expressions Relating to the Life and Achievements of W. W. Ashe,” US Forest Service, US Government Printing Office, June 1932.

8 – Charles Wohlforth, “Conservation and Eugenics: The Environmental Movement’s Dirty Secret,” *Orion*, July 2010. This important article details the connection between eugenics and conservation in Ashe’s time.

- 9 – Leon F. Kneipp, “W. W. Ashe – Pathfinder in Southern Forestry,” *American Forests*, May 1944 (50:240). These are among the most insightful comments about Ashe, made by his successor in the USFS Division of Lands. See also the contribution of Austin Cary to the “Symposium of Expressions Relating to the Life and Achievements of W. W. Ashe,” US Forest Service, US Government Printing Office, June 1932.
- 10 – Letter of January 21, 1932, UNC Wilson Library, Southern Historical Collection, Manuscripts Department, W. W. Ashe - Box 3, Folder 26.
- 11 – **1)** William A. Dayton, “Ashe, Pioneer Forester and Botanist,” *Science* (AAAS), June 19, 1932 (75:629-630). **2)** William A. Dayton (contributor), “Symposium of Expressions Relating to the Life and Achievements of W. W. Ashe,” US Forest Service, US Government Printing Office, June 1932. **3)** William A. Dayton, “William Willard Ashe (1872-1932),” Self-published, November 27, 1936. **4)** William A. Dayton, “We Present William Willard Ashe: Pioneer in Southeastern Forestry,” *Journal of Forestry*, Society of Am. Foresters, March 1946 (44:213-214).
- 12 - In 1937 the botanist H. R. Totten noted that Dayton’s bibliography of works written by W. W. Ashe was incomplete. Some of Ashe’s published writings were not formally ascribed and are folded into USFS, NFRC, and other official publications. Papers with Totten’s comments were found at the UNC Wilson Library, Southern Historical Collection, Manuscripts Department, W. W. Ashe – Box 5, Folder 41.
- 13 – *Ibid.* Charles D. Smith (January 1960), pages 39-40.
- 14 – Ashe and Charles Sargent are known to have met, corresponded, and exchanged information about woody plants from 1895 to 1924. Ashe wrote an illuminating letter on the subject to the Arnold Arboretum in 1927. This letter resides in their archives. Ashe served on the USFS Tree Name Committee from 1928 to 1932, and chaired this committee in the last two full years of his life. In many ways he succeeded Charles Sargent and George Sudworth, two prominent dendrologists who both passed away in 1927.
- 15 – Ashe’s masters thesis is titled “A Study in American Forest Economy: The Applicability of Some of the Principles of Forestry to the State of North Carolina” (1892). The thesis was obtained through a loan of microfilm from the Olin Library at Cornell University.
- 16 – William W. Ashe and Gifford Pinchot *Timber Trees and Forests of North Carolina*, North Carolina Geological Survey, Bulletin #6, M. I. Winston & J. C. Stewart Public Printers and Binders, June 19, 1897.
- 17 – Two letters, obtained from the NC Department of Cultural Resources (NCDCCR), provide details about logistics related to whole tree photographs that appear in NCGS bulletin #6. The letters were dated December 1896.
- 18 – This letter of July 10, 1898 was provided by the NCDCCR.
- 19 – A. F. W. Schimper, *Plant-Geography Upon a Physiological Basis*, 1898. The English translation was by William R. Fisher for Clarendon Press in 1903.
- 20 - Albert E. Radford (etc.), *Natural Heritage: Classification, Inventory, and Information*, University of North Carolina Press, 1981, pages 179, 180-185, 188, 191.
- 21 – Ashe and Carl Schenck corresponded about these topics before the Biltmore Forest School formed. Schenck was Vice-president of NCFR in 1897, during the first attempt to found the organization. See the Biltmore Estate Forestry Department Manager’s Records – Series A (The Biltmore Company, Museum Services Department, Archives Division).
- 22 - *Ibid.* Vinson (1971), page 16. See also Lawrence S. Earley, *Looking for Longleaf: The Fall and Rise of an American Forest*, University of NC Press, 2004, pages 176-177.
- 23 – William W. Ashe and Horace B. Ayers, *The Southern Appalachian Forests*, US Geological Survey, Professional Paper #37, US Government Printing Office, 1905. The land classification map was transmitted on March 7, 1904.
- 24 – More generalized timber density maps in the United States prior to Ashe and Ayers included Brewer (1870), Sargent (1880), and Gannett (1900). For illustrations see Michael Williams (1989), chapter 2, and page 278.

25 – Ashe listed 105 tree species in the region in 1902, and this comprises 93% of 113 large and small trees that were later listed with Little (1980) and Swanson (1994).

26 - In 1980 Delcourt and Harris used the report in a study of carbon budgets in the southeastern US, and in 1988 Pyle and Schafale used it to create baselines for existing primary forests. Two authors, Chris Camuto (1997) and Donald Davis (2000), did an excellent job of folding the report into their overviews of the southern Blue Ridge region, while Margaret Brown (2000) and John Alger (2007) mischaracterized the full extent of the work that went into *The Southern Appalachian Forests*. The land classification map has also been over-interpreted in some cases by USFS Archaeologist Quentin Bass. Though the Ashe and Ayers map was the best of its kind in its day, it is clearly dated.

27 - William W. Ashe, “Relation of Soils and Forest Cover to Quality and Quantity of Surface Water in the Potomac River Basin,” US Geological Survey, March 1907, page 326. See also “Report of the Secretary of Agriculture on the Southern Appalachian and White Mountain Watersheds,” US Government Printing Office, 1908, pages 36-37. The latter has been referred to as the Wilson Report II.

28 – *Ibid.* Charles D. Smith (January 1960), page 58. The idea was first proposed in 1900.

29 – There is a solid record of Ashe’s involvement with the National Forest Reservation Commission (NFRC) from June 15, 1912 to 1932. He started doing tract specific field work as a Forest Assistant and a Forest Examiner within the agency in 1911. He was secretary of the NFRC for 10 years (1918-1928), and his last promotion in 1928 increased his involvement with the commission. See Entry 75, Booklet One of Minutes for the NFRC, National Archive II, College Park, MD. See also “Report on the Burke-McDowell Company Tract,” by Verne Rhoades and W. W. Ashe, April 1911, Supervisors Office, Nantahala-Pisgah NF.

30 – The endnote of a 5/29/15 letter from W. W. Ashe to J. J. Fritz compares timber volumes of an 8,000 acre tract in the Great Smoky Mountains. See entry 75, Box 9, General Acquisition Correspondence 1915, National Archive II, College Park, MD.

31 – For a description of timber cruising methods using a compass and chains see *Sound Wormy* (edited by Nicole Haylor), University of Georgia Press, 2002, page 100.

32 - William W. Ashe, “The Eastern National Forests,” *Southern Lumberman*, January 1, 1932 (1818:35-39), page 36.

33 – J. C. Kircher, “William W. Ashe”, *The Courier* (Band of the Scattered Family – USFS Region 7), March 18, 1932. Found at the UNC Wilson Library, Southern Historical Collection, Manuscripts Department.

34 – *Ibid.* Letter of January 21, 1932, UNC Wilson Library, Southern Historical Collection, Manuscripts Department, W. W. Ashe - Box 3, Folder 26. For information about the economic disparity between the West-and-the-South, and the Northeast and the upper Midwest see *Demographic Trends in the 20<sup>th</sup> Century* by the US Census Bureau.

35 - UNC Wilson Library, Southern Historical Collection, Manuscripts Department, W. W. Ashe - Box 3, Folder 28. Bernard Frank, of the University of Wisconsin, had won a similar grant in 1930 regarding land classification and utilization in the lake states.

36 – “Relation of Forestry to the Control of Floods in the Mississippi Valley”, House of Representatives Document #573 - 70<sup>th</sup> Congress, February 11, 1929.

37 – William W. Ashe “Financial Limitations in the Employment of Forest Cover in Protecting Reservoirs,” USDA Bulletin #1430, US Government Printing Office, August 1926.

38 - William W. Ashe “Can Cotton Production Be Stabilized? Ownership of Land Gives No Right to Use It to Public Detriment,” *The Progressive Farmer and Farm Woman*, July 5, 1930.

39 - Letter from R. M. Harper of January 19, 1932, UNC Wilson Library, Southern Historical Collection, Manuscripts Department, W. W. Ashe - Box 3, Folder 26.

40 - “A National Plan for American Forestry,” US Senate Document #12, US Government Printing Office, March 1933, (a.k.a. the Copeland Report).

41 – For a description related to these 1935 and 1937 maps see Leon F. Kneipp, “Uncle Sam Buys Some Forests,” *American Forests*, October 1936 (42:443-446-483).

42 - Efforts to assess old growth sites on national forest lands in the region reached a peak in May 2004, with the creation of an unpublished catalog titled "High Quality Reconnaissance and Verification in Old Growth Forests of the Blue Ridge Province." Fourteen field workers, including the author, provided detailed work that made up this catalog. Josh Kelly and the Southern Appalachian Forest Coalition continued this kind of field work, generating GIS maps and reports from 2004 to 2007.

43 – For exact references to this dichotomy see the following: 1) Inman F. Eldredge, "The Management of Hardwood Forests in the Southern Appalachians," *Journal of Forestry*, March 1920 (18:284-291). 2) Earl H. Frothingham, "Site Determination and Yield Forecasts in the Southern Appalachians", *Journal of Forestry*, January 1921 (19:1-14). This is a transcript of an address given before the Washington Section of the Society of American Foresters on November 18, 1920.

44 – Of particular interest is a research paper by Ferdinand W. Haasis, "Significance of a 255-Year Age Class in An Eastern Kentucky Forest", *Journal of Forestry*, 1923 (21:700-704).

45 – James W. Toumey, *Foundations of Silviculture Upon an Ecological Basis*, John Wiley & Sons, 1928, pages 272 and 279-284. Toumey was a professor at the Yale Forest School. His description of Physical Type 28 corresponds to Orographic Typing methods. See also two important articles by Ashe and R. C. Hall concerning early forest assessment practices. Both were in the *Journal of Forestry* in March, 1917.

46 – Forest assessment methods that used Orographic Typing can be found in reports and maps generated by the USFS Division of Lands. These records were created prior to World War II, while various phases of land acquisitions were in progress.

47 – Harold J. Lutz, "The Vegetation of Heart's Content, A Virgin Forest in Northwestern Pennsylvania," *Ecology*, Ecological Society of America, January 1930, introduction.

48 - Committee of the Southern Appalachian Section "A Forest Type Classification for the Southern Appalachian Mountains and the Adjacent Plateau and Coastal Plain Regions," *Journal of Forestry*, 1926 (24:673-684). Earl Frothingham and J. S. Holmes served on this committee.

49 – William W. Ashe, "Reserved Areas of Principle Forest Types as a Guide in Developing an American Silviculture," *Journal of Forestry*, March 1922 (20:276-283).

50 - Earl H. Frothingham, "Forest Research," *Journal of Forestry*, April 1924 (22:343-352) page 346.

51 - Daniel B. Botkin, *Discordant Harmonies: A New Ecology for the Twenty-first Century*, Oxford University Press, 1990, pages 193-197.

52 - Entry 75, NC - Box 2, General Acquisition Correspondence 1916, National Archive II, College Park, MD.

53 - The two oak oriented bulletins were published by the USFS. The American chestnut and yellow poplar bulletins were published by the Tennessee State Geological Survey. The shortleaf pine bulletin was published by the Department of Agriculture and Immigration of Virginia, and the bulletin on loblolly pine was produced by the NC Geological and Economic Survey in cooperation with the USFS.

54 – William W. Ashe, *Loblolly or North Carolina Pine*, North Carolina Geological and Economic Survey, Bulletin #24, 1915.

55 – This information was found in a copy of Ashe's Civil Service Exam of 1930 at UNC Wilson Library, Southern Historical Collection, Manuscripts Depart., W. W. Ashe – Box 3, Folder 28.

56 – Another example of Ashe's work in this vein can be found in his five part series on practical forestry methods, published by the *Progressive Farmer* in 1913.

57 – William W. Ashe, "Cellulose Industries as a Field for Georgia Capital" (Second Part), Georgia Forest Service Bulletin, May 1929. See also E. A. Sherman's contribution to the "Symposium of Expressions Relating to the Life and Achievements of W. W. Ashe," US Forest Service, US Government Printing Office, June 1932.

58 – Staffan Muller-Wille, "The Love of Plants," *Nature*, March 15, 2007, page 268.

- 59 – Peattie made an inaccurate statement about the inaccessibility of Ashe’s plant collection in his 1948 book on trees. Evidence has been found, at the UNC Herbarium and the Southern Historical Collection (UNC Wilson Library), that Ashe loaned out parts of his collection to numerous botanists.
- 60 – Ron Lance has done excellent work recently to seek clear taxonomic placement for hawthorns. He and J. B. Phipps are largely responsible for the list of accepted Ashe hawthorns.
- 61 - Mary Coker Joslin, *Essays on William Chambers Coker, Passionate Botanist*, University of NC at Chapel Hill Library, 2003, chapter 4.
- 62 – See information about L. W. Lynch on the UNC Herbarium website (History/Collectors tab), written by William Burk, 2005.
- 63 – Samuel A’Court Ashe, “Should Evolution Be Taught in the Public Schools?,” possibly self-published, 1925. This article was found at UNC Wilson Library, Southern Historical Collection, Manuscripts Department, W. W. Ashe – Box 4, Folder 33.
- 64 – *Ibid.* Charles D. Smith (January 1960), page 62.
- 65 - John W. Harshberger, “An Ecological Study of the Flora of Mountainous North Carolina,” *Botanical Gazette*, October & November 1903 (36:241-258 and 36:368-383), pages 256, 371-72.
- 66 – Gifford Pinchot, *A Primer of Forestry II – Practical Forestry*, US Government Printing Office, 1905, page 8.
- 67 – George Frederick Schwarz “A Suggestion Regarding the National Forest Reserves,” *Forestry and Irrigation*, June 1905, pages 287–289. He later wrote *The Longleaf Pine in Virgin Forest: A Silvical Study*, John Wiley and Sons, 1907.
- 68 – This information was found in a set of letters to the first supervisors, UNC Wilson Library, Southern Historical Collection, Manuscripts Department, W. W. Ashe Collection. See also Verne Rhoades and W. W. Ashe “Ice Storms in the Southern Appalachians” *Monthly Weather Review*, August 1918 (46:373-374).
- 69 – “The Preservation of Natural Conditions” *Science (AAAS)*, March 18, 1921 (53:252-253).
- 70 – UNC Wilson Library, Southern Historical Collection, Manuscripts Department, W. W. Ashe - Box 1, Folder 11 (a).
- 71 – Daniel S. Pierce, *The Great Smokies: From Natural Habitat to National Park*, University of TN Press, 2000, pages 52-55.
- 72 – *Ibid.* Daniel S. Pierce (2000), pages 53-54 related to correspondence between Wallace and Senator George Norris of April 24, 1924.
- 73 – A copy of this paper was found at the UNC Herbarium, and correspondence between Ashe and Annette Braun was found in his collection at UNC Wilson Library, Southern Historical Collection, Manuscripts Department.
- 74 – W. W. Ashe, “Virgin White Pine Area as Part of Allegheny National Forest,” *Ecology*, July 1929 (10:358-59).
- 75 – L. G. Romell “The Importance of Natural Areas to Forestry Officially Recognized,” *Science (AAAS)*, June 28, 1929. See also: L. G. Romell “Heart’s Content: A Promising Precedent,” *Journal of Forestry*, May 1929 (27:590-592).
- 76 - UNC Wilson Library, Southern Historical Collection, Manuscripts Department, W. W. Ashe - Box 3, Folder 25.
- 77 - The morning after USFS chief Robert Y. Stuart signed the approval for Middle Creek RNA he fell to his death from his office window at the Atlantic Building in Washington, DC. See page 196 of Harold K. Steen (1976) for events of October 23, 1933.
- 78 - Benjamin R. Cohen, “Surveying Nature: Environmental Dimensions of Virginia’s First Scientific Survey, 1835-1842,” *Environmental History*, January 2006 (11:37-69).
- 79 - Phillip J. Pauly, *Biologists and the Promise of American Life: From Meriwether Lewis to Alfred Kinsey*, Princeton University Press, 2000.

- 80 – For a clear description of changes in transportation related to botanical discoveries over the centuries see John K. Small, *Manual of the Southeastern Flora*, Self-Published in NY, 1933, introduction, page x.
- 81 – Gerald E. Allen, “Life Sciences in the 20<sup>th</sup> Century,” History of Science Society, Notre Dame, Indiana, website.
- 82 – Harry B. Brown, “The Genus *Crataegus*, with Some Theories Concerning the Origin of Its Species”, *Bulletin of the Torrey Botanical Club*, May 1910 (37:251-260).
- 83 – Correspondence between Yard and Kneipp was found in dendrology boxes in Record Group 95 at the National Archive II in College Park, MD.
- 84 – Joseph S. Illick *An Outline of General Forestry*, Barnes & Noble, September 1935, page 39.
- 85 – The Wildland Study was found in Record Group 95, #85, National Archive II in College Park, MD. Maps were found there and in the cartography section.
- 86 – Charles C. Adams, “A Note for Social-Minded Ecologists and Geographers,” *Ecology*, Ecological Society of America, July 1938 (19:500-502).
- 87 – 1) David A. Clary, *Timber and the Forest Service*, University Press of Kansas, 1986, epilogue. 2) Paul W. Hirt, *A Conspiracy of Optimism*, University of Nebraska Press, 1994, page 55. 3) Patricia N. Limerick, “Forestry and Modern Environmentalism: Ending the Cold War,” *Journal of Forestry*, December 2002.
- 88 – W. C. Coker; J. S. Holmes; and C. F. Korstian (Committee of the North Carolina Academy of Science), “William Willard Ashe,” *Journal of the Elisha Mitchell Scientific Society*, October 1932 (48:40-47).  
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### Comparing Early Foresters

In the spring of 2003 historian Char Miller made a keen observation about a group of five foresters who were outside the mainstream.<sup>1</sup> They were mentioned in Robert Marshall’s 1933 book titled *The People’s Forest* which covered Depression-era national forest policies. This circle of five radical foresters included George P. Ahern, Earle H. Clapp, Edward N. Munns, Gifford Pinchot, and Raphael Zon.<sup>2</sup> W. W. Ashe could have been placed on this list, since he shared characteristics with many of these foresters and researchers. However, Ashe would not likely have viewed himself as a radical. His modesty could have easily kept him outside the realm of recognition in Marshall’s book, though Ashe’s work on forest influences on water quality was used as a reference in one of Marshall’s articles three years earlier.

Of the five individuals listed above Edward N. Munns most closely resembles Ashe. Ed was likewise a forester in the early USFS who made significant contributions to dendrology, silvicultural research, and forest influences on water quality. He and Clark L. Stevens wrote insightful observations about the need to bring biology into the practice of forestry in the 1920s.<sup>3</sup> After Munns left the USFS, and became a Fellow of the Society of American Foresters, he went on to become the executive director of The Nature Conservancy in the late 1950s.

Ashe’s relationship to Gifford Pinchot was mostly contained in early phases of forestry work related to their first meeting at Biltmore Estate in 1893, their collaboration with J. A. Holmes in the NC Geologic Survey, timber assessments and forest inventories in both the Division of Forestry and the Bureau of Forestry, and work on the Potomac River Basin in Virginia. Beyond such clear collaborations between these men, relations appear to have been shallow. Pinchot mentioned Ashe just once in his well-known memoir, *Breaking New Ground*, and his contribution to the symposium of perspectives produced after Ashe’s death was very short, though apparently sincere.<sup>4</sup>

- 1 – Char Miller (review), “Bower to the People,” *OnEarth*, spring 2003, page 37.
- 2 – Ashe had few interactions with Raphael Zon, and made the following entry in his diary on February 18, 1918 “At Office. Talk with H. A. Stable who is as viciously anti-south as Mr. Zon.” Raphael Zon was the editor of the *Journal of Forestry* in 1926, when Ashe submitted a review of H. H. Chapman’s controversial paper on the establishment of longleaf pine and the effects of fire in Louisiana. Ashe’s review was rejected by the journal, and he self-published it on July 16, 1926.
- 3 – Edward N. Munns, “Where Is the Forest Biologist?,” *Journal of Forestry*, Society of American Foresters, December 1926.
- 4 – Wilbur R. Mattoon (compiler), “Symposium of Expressions Relating to the Life and Achievements of W. W. Ashe,” US Forest Service, US Government Printing Office, June 1932. Correspondence between Ashe and Pinchot may exist in the collection of Pinchot’s papers at the Library of Congress (see Quentin Bass, USFS Archeologist).

### Ashe’s Connection to People at Biltmore Estate

William W. Ashe had a surprisingly long association with Biltmore Estate and numerous individuals who worked there. This spanned a twenty-three year period between September 1893 and October 1916. His deepest friendships and working relationships were with botanists at the Biltmore Herbarium, namely F. E. Boynton and C. D. Beadle. Ashe and Boynton frequently exchanged letters before the herbarium was destroyed in 1916, and the two are known to have gone on plant collecting excursions to Colorado on at least two occasions.

Joseph A. Holmes, director of the NC Geological Survey, had sent Ashe to assist Gifford Pinchot with work on the Biltmore Estate by September 1893.<sup>1</sup> Prior to this assignment Ashe had referred to timber management on the property as “little more than an experiment.”<sup>2</sup> The collaboration between Ashe and Pinchot culminated in the influential bulletin titled *Timber Trees and Forests of North Carolina* and numerous forest inventories prior to the establishment of the US Forest Service. Ironically, the year the bulletin mentioned above was printed Ashe wrote a long and rambling article about the first attempt at systematic forest management on the estate. He used the term “conception of an alien” to describe the working plans, and gave some details about the largely agricultural methods of forest management that were being applied. The article appeared in a Raleigh newspaper called *The Farmer and Mechanic* in October 1897, around the time of the state fair.

Ashe also collaborated with Carl A. Schenck in 1897 related to early efforts to create the NC Forestry Association. He later attended Schenck’s Biltmore Forest Fair in 1908, obscured in a surviving photograph by many other taller attendees. In the fall of 1912 Ashe worked with R. C. Hall and others to assess the large Vanderbilt holdings. Mr. Hall later put together an illuminating article about this experience, going back to original photographs and his own correspondence of 1912.<sup>3</sup> The forest survey was done by a small crew just after Carr Lumber Company had signed a contract to do conservative cutting in the area. The survey occurred while Mr. Vanderbilt was still alive, and before his large tract became part of Pisgah National Forest.

In 1916, after a devastating flood that summer, Ashe wrote W. R. Maxon and advised him to encourage Mrs. Vanderbilt to donate parts of the water-damaged Biltmore Herbarium to the Smithsonian Institution.<sup>4</sup> This included parts of the botanical library, and the plant collection that had been reduced to about one-quarter of its specimens.

The idea for an arboretum in the southern Blue Ridge region originated with Frederick Law Olmsted in 1889.<sup>5</sup> He had worked with Charles Sargent on the Arnold Arboretum in Massachusetts and saw an opportunity to create an expanded scientific arboretum in relation to his work with George Vanderbilt. A detailed proposal was sent to Mr. Vanderbilt at the end of 1893, and the idea simmered for a number of years until it was abandoned in 1901. Much later, W. W. Ashe made an enthusiastic suggestion for a national arboretum in a short for the *Journal of Forestry* in May 1921. He thought the Black Mountain range would be a perfect location due to the wide range of plant diversity found there and in the region at large. Ashe later contributed to Congressional testimony in favor of the establishment of a national arboretum in Washington, DC in January 1926. He gave this testimony as a representative of the Society of American Foresters, and within it he mentioned that the southern Blue Ridge region had “more than 50 distinct sites occupied by distinct associations of trees.” The arboretum near Bent Creek came into being about sixty-one years later.

1 – For a strong scholarly critique of Pinchot’s time at Biltmore Estate, and an explanation of exaggerations of income claimed to have been made through forest management activities there see Brian Balogh, “Scientific Forestry and the Roots of the Modern American State: Gifford Pinchot’s Path to Progressive Reform,” *Environmental History*, April 2002.

2 – William W. Ashe, “Notes on the Forest Resources of North Carolina,” *Journal of the Elisha Mitchell Scientific Society*, January 1893, page 22. Ashe refers to Pinchot indirectly as having been “...trained in European schools of forestry” and later hired as the forester of Biltmore Estate.

3 - R.C. Hall “The Pisgah Forest in 1912,” *American Forests*, September 1964.

4 – Bill Alexander, *The Biltmore Nursery: A Botanical Legacy*, Natural History Press, 2007, pages 61-62.

5 – *Ibid.* Bill Alexander (2007), page 49.

## Photographs



1. William Willard Ashe circa 1891-92, perhaps made during his college years while traveling between North Carolina and Cornell University. The photograph was taken at Rice Studio on Pennsylvania Avenue in Washington, DC (negative #1013), and is courtesy of Will Ashe Bason.



2. Margaret Henry Wilcox while she was married to Dr. Wilcox near Dresden on Staggs Creek in Ashe County, NC. W. W. Ashe is known to have attended the wedding ceremony of Mariana Wilcox (Margaret's step-daughter) and Mr. Barbor on September 30, 1891. Photograph courtesy of Betsy Barbor Hawkins.



3. W. W. Ashe between 1893 and 1896 while he was working with the North Carolina Geological Survey. The mustache and side burns are known to have been present as early as 1893 when Ashe was doing extensive field work in western North Carolina. The photograph was taken at Wharton Portrait studio, 119 Fayetteville Street, Raleigh, NC and is courtesy of George and Doris Bason.



4. The Plant Lab at 606 Willard Place was built by W. W. Ashe circa 1895 on what was then Ashe family property. Some of “Will’s weeds”, as a few family members referred to them, were stored upstairs here until his death in 1932. The building was later converted into a residence. Photograph by the author in February 1998.



5. Enlargement of an Ashe family photograph from 1897. It was taken on the grounds of Elmwood (the family home) at a fallen American elm tree. It may record the effects of a storm that had moved through Raleigh, NC. William’s brother, Thomas Martin Ashe, is standing behind him. Photograph courtesy of George and Doris Bason.



6. This portrait of W. W. Ashe likely dates to the first decade of the 1900s and may have been taken around the time of his marriage in 1906. It was made at Wharton Portrait studio, 119 Fayetteville Street, Raleigh, NC and is courtesy of George and Doris Bason.



7. An oval portrait of Margaret likely taken after her marriage to Ashe at the Episcopal Church in Bristol, TN in December 1906. The photograph was taken at G. Buck's Studio, 1112 F Street, Washington, DC and is courtesy of Betsy Barbor Hawkins.



8. A side view of Margaret taken at the same time and place as above. Photograph courtesy of Betsy Barbor Hawkins.



9. William Willard Ashe in a 30 year old pole stand of shortleaf pine in Virginia. This photograph was taken in 1912 and appears on page 16 of *Shortleaf Pine in Virginia* (1913) (US Forest Service photo #12156). Photograph courtesy of D. H. Ramsey Library Special Collections - UNCA in Asheville, NC.



10. Ashe circa 1926 in a studio portrait likely taken in Washington, DC. The image was made into post cards, and it was later used as the base for a half-toned image of Ashe that appeared in *The Progressive Farmer*. Photograph courtesy of Will Ashe Bason.



11. Ashe, Margaret, and Virginia Hamilton are seated on the back steps of their house at 1512 Park Road NW in Washington, DC likely in the late 1920s. Virginia was Margaret's grand-daughter. Both Virginia and her brother Joseph were raised in this household after Margaret had removed them from their father, Mr. Walter Hamilton. The mother, Maude (or May) Allen Wilcox Hamilton, had passed away in 1914 after over 15 years of marriage to Walter. Photograph courtesy of Betsy Barbor Hawkins.



12. Ashe standing next to Margaret who is in a wheelchair at a hospital in Washington, DC. She had contracted a stomach illness in April 1929, and a letter home stated that she was having food prepared for her at 1512 Park Road NW. Photograph courtesy of Betsy Barbor Hawkins.

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## People from the Past

William C. Coker; William A. Dayton; Thomas G. Harbison; John S. Holmes; Leon F. Kneipp;  
Clarence F. Korstian; Elbert Little; Wilber R. Mattoon; Joseph H. Pratt; Edward A. Sherman.

## Archives

- The National Archives at College Park - College Park, MD  
(Record Group 95 (USFS) Textual Records, Photographic Records, and Cartographic Records)
- The National Archives - Washington, DC (downtown)
- The National Archives (Southeastern Region) - Atlanta, GA
- North Carolina Department of Cultural Resources (Division of Archives & History) - Raleigh, NC
- North Carolina State Museum of Natural Sciences - Raleigh, NC
- Archives of Appalachia at Charles C. Sherrod Library - ETSU in Johnson City, TN
- The Forest History Society - Durham, NC

## Herbarium and Arboretum Collections

- The University of North Carolina Herbarium (Coker Hall) - UNC at Chapel Hill, NC
- The United States National Herbarium (Smithsonian Institute) - Washington, DC
- L. H. Bailey Hortorium-Herbarium - Cornell University in Ithaca, NY
- The Arnold Arboretum of Harvard University (Archival Collections) - Jamaica Plain, MA
- Harvard University Herbaria - Boston, MA

## Libraries and Special Collections

- The National Agricultural Library (USDA) - Beltsville, MD
  - Supervisors Office of the Nantahala-Pisgah National Forest (USFS) - Asheville, NC (land acq. files & atlases)
  - Southern Research Station (USFS) - Asheville, NC (collection of AFES reports, papers, and photos)
  - Southern Research Station: Bent Creek Experimental Forest (USFS) - Asheville, NC
  - North Central Research Station (USFS) - St. Paul, MN
  - Northeast Research Station (USFS) - Delaware, OH
  - D. H. Ramsey Library - UNCA in Asheville, NC
  - D. H. Ramsey Library Special Collections - UNCA in Asheville, NC (USFS photo collection, etc.)
  - Hunter Library - Western Carolina University in Cullowhee, NC
  - Martha Ellison Library - Warren Wilson College in Swannanoa, NC
  - C. G. Belk Library - ASU in Boone, NC
  - C. G. Belk Library (W. L. Eury Appalachian Collection) - ASU in Boone, NC
  - Southern Historical Collection (Manuscripts Dept.) at Wilson Library - UNC at Chapel Hill, NC
  - North Carolina Collection at Wilson Library - UNC at Chapel Hill, NC (includes the clipping file)
  - W. R. Davis Library - UNC at Chapel Hill, NC
  - Botany Section of the Biology Library (Coker Hall) - UNC at Chapel Hill, NC
  - Geological Sciences Library (Mitchell Hall) - UNC at Chapel Hill, NC
  - Perkins Library - Duke University in Durham, NC
  - Perkins Library (Rare Book, Manuscript, and Special Collections) - Duke University in Durham, NC
  - Biological and Environmental Sciences Library - Duke University in Durham, NC
  - Joyner Library - East Carolina University in Greenville, NC (digitized books)
  - Pack Memorial Library (including Interlibrary Loan Services) - Asheville, NC
  - Riverside Cemetery (Asheville Parks and Recreation Department) - Asheville, NC
  - The American Chestnut Foundation - Asheville, NC (branch office)
  - Isothermal Community College Library (including Interlibrary Loan Services) - Spindale, NC
  - McDowell County Public Library - Marion, NC
  - Ashe County Historical Society - West Jefferson, NC
  - Spartanburg County Public Library (The Kennedy Room) - Spartanburg, SC
  - New Hanover County Public Library (NC Room - Bill Reaves Collection) - Wilmington, NC
  - Olivia Raney Public Library - Raleigh, NC
  - Harvard Forest (Archives) - Petersham, MA
  - Carl A. Kroch Library (Div. of Rare and Manuscript Collections) - Cornell University in Ithaca, NY
  - Bancroft Library at the University of California (Regional Oral History Office) - Berkeley, CA
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