

Margaret Stoughton Abell: The First Female Forest Service Forester Comes to the Appalachian Forest Experiment Station

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In 1930, Margaret Cordelia Stoughton became the first woman with a forestry degree to be hired by the U.S. Department of Agriculture Forest Service as a forester (Kline 2021). During this time, a female forester in America was a novelty and the media reminded readers of that fact at every opportunity in national newspapers and college magazines. After her assignment to the Appalachian Forest Experiment Station (AFES), Margaret's work—conducting research, publishing papers, and taking photographs—alongside other scientists was instrumental in the research conducted at the AFES. Herein, we trace her public life and scientific accomplishments during her tenure with the AFES.

Person believed to be **Margaret Stoughton** sitting on a 68-year-old chestnut oak (*Quercus montana*) being hand-hewed for railroad ties at a field research site in Bent Creek Experimental Forest. (USDA Forest Service photo taken by J.H. Buell)



“Margaret graduated in 1930 with a Bachelor of Science degree in forestry (Iowa State College 1930), the only female forestry graduate in her class of 14 and the first woman to graduate as a forester at Iowa State (Waterloo Daily Courier 1930).

BEFORE ASHEVILLE (1908–1930)

Margaret and her younger brother, George, were raised by Herbert and Elizabeth Stoughton in Osage, IA, a small town of 3,500 residents in the northeastern corner of the State. After high school, she attended Iowa State College to study forestry. Margaret was also very active in extracurricular activities, including serving as president of the Women’s Athletic Association, member of the Forestry Club, and advertising manager of the *Ames Forester* (Iowa State College 1930). At the beginning of the Great Depression, a faculty advisor suggested she take statistics classes in the mathematics department under Professor George Snedecor, which could increase her employment opportunities for a government laboratory research job (Sinclair 2015). During the 1920s, Snedecor embraced the practical methods of data analysis in agricultural studies developed by the English mathematician, Ronald Fisher (Fisher 1925). Snedecor’s statistical laboratory assisted other university researchers with study designs. Although no details of Stoughton’s actual training with Snedecor can be found, Snedecor was well known for giving his students hands-on experience in the application of statistics to agricultural questions and teaching students how to use calculating machines to process large datasets (Cox and Homeyer 1975).

Hence, Snedecor’s courses taken at Iowa State likely facilitated Stoughton’s employment at the Forest Service. Given the scarcity of foresters with statistical and computational training, a person with such a background would have been appealing to Forest Service leadership, who recognized the importance of increasing the rigor of their science (Bruce 1999). For example, a few years earlier Joseph Kittredge, a Forest Service researcher with the Lake States Forest Experiment Station, strongly advocated for the same rapid advances in data analysis methods used by many disciplines at universities in forestry applications (Kittredge 1924). Kittredge’s article likely caught the attention of F.X. Schumacher in the national office of the Forest Service in Washington, DC. Schumacher, a highly trained biometrician and head of the forest measurements section, was aware of Fisher’s data analysis textbook, which was then being used to teach graduate-level courses in statistics at the U.S. Department of Agriculture Graduate School (Bruce 1999). Hiring new graduates with statistical skills was not unprecedented and encouraged by agency leadership (Bruce 1999). In 1929, the Southern Forest Experiment Station hired Roy A. Chapman in part to take advantage of his quantitative knowledge (Wakeley and Barnett 2016).

THE ASHEVILLE YEARS (1930–1937)

Margaret graduated in 1930 with a Bachelor of Science degree in forestry (Iowa State College 1930), the only female forestry graduate in her class of 14 and the first woman to graduate as a forester at Iowa State (Waterloo Daily Courier 1930). Margaret scored high on a Federal civil service exam and was offered a job performing data computations with the experiment stations branch of the Forest Service, which she immediately accepted (Sinclair 2015). When Margaret was assigned to the AFES, she was the first professionally trained female forester in the Forest Service (Kline 2021). Public interest items about a female forester in the Forest Service quickly received national and local attention. In August 1930, Margaret’s photograph, with caption information about her being the first woman forester and stationed at the AFES, appeared as a news release

in the Associated Press in Iowa and California newspapers (Des Moines Register 1930, Los Angeles Times 1930).

Information on her employment also appeared in the *Service Bulletin*, an agency newsletter for Forest Service employees. Under the heading “The Forest Service Feminine,” readers were informed of five women in professional positions, one of which was Stoughton, who was not named and identified only as a forester (Edgerton 1931). Evidence of the rarity of women foresters was apparent when Margaret was approved for membership in the Society of American Foresters (SAF 1931). Under the heading of “Elections to Membership” the article went on to state: “The following *men* ...” have been approved as members (*italics added*).¹ The two Asheville newspapers found many opportunities to remind readers that Margaret Stoughton was a female forester. In a February 1931 article about a hiking club, Margaret was listed as secretary and “... one of the few women foresters in America” (Asheville Citizen-Times 1931a). A note in another article by the *Asheville Citizen-Times* reported that the AFES had provided Margaret’s photograph to the Associated Press, which had requested it for distribution to other newspapers through their news services (Asheville Citizen-Times 1931b). Under the heading “Miss Stoughton in Second Year Forestry Work,” Margaret is identified as the second professional forester after Dr. Eloise Gerry at the Forest Products Laboratory in Madison, WI² (Asheville Citizen 1931a). With words about Margaret being a professional Federal forester, the Asheville Citizen (1931b) reported that she and Charles Abell, another junior forester at the AFES, were married on July 10, 1931 in the All-Souls Presbyterian Church of Asheville. Margaret’s photograph provided to the Associated Press (Asheville Citizen-Times 1931b) (including a note that she was a forester) appeared several days later under the heading of “Recent Bride” (Asheville Citizen 1931c). Interestingly, it is unclear how the Abells skirted the anti-nepotism regulations of the agency (Kline 2021).

Hired as a junior forester, records of Margaret’s work are limited. However, it is quite apparent that Margaret’s work at AFES was not restricted to an office environment doing statistical calculations, as the civil service job description had implied. Evidence as a researcher is shown by her participation in the 1931 meeting of the Appalachian Forest Research Council (Asheville Citizen 1931d). Margaret had been originally assigned to study the management of mountain hardwood forests and phenology (AFES 1932). According to a bibliography of the publications of the AFES, she published five articles (three as lead author) during her tenure with the AFES (Southeastern Forest Experiment Station 1947) and was an active field participant in these studies. As an example, a large-scale, operational study of harvesting and regeneration had been installed by Jesse Buell. Margaret was a co-investigator on this work and a credited contributor to some of the articles produced (Buell and Abell 1935). Photographic documentation of study sites was also among her (and other researchers’) field activities at the Bent Creek Experimental Forest (BCEF), 10 miles south



Photograph above from the Asheville Citizen-Times described Margaret (now Abell) as the “second woman to be appointed [as a scientist] in the U.S. Forestry Service.” An earlier photograph of Stoughton provided to newspapers by the Associated Press and printed in the Los Angeles Times (1930) with the caption:

“Margaret Stoughton— ASHEVILLE (N.C.) Aug. 15. Uncle Sam has called to his assistance in solution of forestry problems the keen mind of Margaret Stoughton, brilliant forestry graduate of Iowa State College. Miss Stoughton is the first junior woman forester in the United States. She is stationed at the Appalachian [F]orest [E]xperiment [S]tation here. Her home is in Osage, Iowa.”

¹ Also included in the list of new SAF members was Leonard I. Barrett, whose 1936 silvicultural study in an old-growth stand in the Bent Creek Experimental Forest would be a first for the AFES (McNab 2023a).

² Not a forester by training, Dr. Eloise Gerry was a microbiologist located at the Forest Products Laboratory, in Madison, WI. She primarily performed laboratory studies of wood anatomy associated with oleoresin production from southern yellow pines.

Example of a monochrome photograph for documenting conditions and progress of studies at field research sites. Identification notes on the envelope enclosing copies of this photograph state: “Methods of cutting study, Bent Creek, Pisgah National Forest, N.C.; No. 254793. Repeat of 255757. General view of clear cutting. Brush burned on left half and left on right half. Part of [Bent Creek] woodyard at foot of hill.” (USDA Forest Service photo taken by Margaret C. Stoughton)



of Asheville. A photograph taken by Margaret in May 1931 shows the clearcut harvesting treatment, and visible in the lower right corner is a stack of cut wood ready for loading and transport to a community woodyard in Asheville.³

A 1932 news item titled “On Capital Detail” stated that Margaret was in Washington on a special detail of 10 days doing computing work (Asheville Citizen 1932). The detail could have been related to her 1933 co-authored *Journal of Forestry* article (Nelson and others 1933). The publication reported research results as equations to predict effects of wildfire on hardwood sawtimber. Margaret’s statistics classes at Iowa State likely facilitated her analysis of data from the study involving 317 trees of 5 species. Multiple linear regression was used to model the effects of heat from a spring wildfire on cambium damage in relation to tree diameter and species. The complex nature of the derived regression models is remarkable for its time. Margaret’s contribution to the study is unknown but could have been substantial because she was included as co-author with two senior researchers. The data analysis necessary for this article would have been formidable, particularly considering that only a mechanical calculator was likely available to derive regression coefficients, evaluate model formulations, and determine standard errors. However, Bruce (1999) reported the Washington Office had bought a Hollerith machine that used tabulating cards, which “... was a gigantic improvement over computing with hand-operated mechanical calculators.” Margaret’s detail, therefore, probably included assisting with writing the highly technical manuscript. A later example of her innovative use of statistical methods is evident in her co-authored publication with Jesse Buell (Buell and Abell 1935). In that early example of projecting stand growth after partial cutting, it appears that Margaret derived the printed volume tables based

³Additional information related to the timber harvest treatments required for this study and its connection with the Asheville woodyard during the Great Depression is described in McNab 2023b.



on regression models rather than response curves fitted by hand to field data as was typical of that time.

Margaret's article (Abell 1933) in the *Ames Forester* is probably her best known and provides an example of her excellent writing skills. In this paper, she provided a vivid description of a "virtual" tour of the BCEF to view ongoing research studies and a reference to the "unemployment relief appropriations" for building Hard Times Road (in 1931). She also provided considerable detail on sites of several fire studies, which provides a connection with another of her publications on fire damage to trees and its correlation with heart rot (Abell 1932). Perhaps noteworthy in this article was that the editor of *Ames Forester* reminded readers of Margaret's gender and that she did field work (she made no mention of this herself). The editor also mentioned her work on the Capper Report⁴ and stated that half of her time was occupied by computations. Later office reports found her assigned to studies on the silviculture of black locust (*Robinia pseudoacacia*), a species with highly desirable characteristics for fence posts and erosion control (Abell 1934, 1935a, 1936). Margaret also helped others with research, as noted in an informative footnote in Huckenpahler (1936) acknowledging her consultation on his data analysis. In 1937, she wrote an editorial letter to the *Journal of Forestry* (Abell 1937) responding to comments by Cummings (1937) on her earlier article (Abell 1935b) describing the modification of Craighead calipers for small trees.

A photograph of a black locust (*Robinia pseudoacacia*) seed tree growing in Glenn Gap on the Bent Creek Experimental Forest (BCEF). The two white objects in the background beyond the automobile are an instrument shelter and a rain gauge that were part of early watershed research at BCEF before the 1934 establishment of the Coweeta Hydrologic Laboratory. (USDA Forest Service photo taken by Margaret S. Abell)

⁴Following the heavy use of forest resources during World War I there was growing public concern about rapidly increasing timber prices and the potential for declining supply to meet immediate and future demand. In Senate Resolution 311 of 1920, Senator Capper of Kansas requested the Secretary of Agriculture provide facts about the present and future wood supply situation. The Forest Service response was entitled "Timber Depletion, Lumber Prices, Lumber Exports, and Concentration of Timber Ownership" or commonly known as the Capper Report. Margaret's actual role in the production of the Capper Report is unknown; she could have been involved in an update of the original data.

Margaret resigned from the AFES in May 1936 before the birth of her daughter, Jean Elizabeth (Harmon 1983). She apparently volunteered after resigning because she photographed one of her black locust study trees in September 1936.

AFTER ASHEVILLE (1937–2004)

In 1937, Margaret and Charles departed Asheville for the Shasta National Forest, in northwestern California. Although she no longer worked for the Forest Service, she never stopped being a forester. In 1982, the Willamette chapter of the Society of American Foresters recognized her for 50 years of continuous membership (SAF 1982); this time the SAF got it right—Margaret was not one of the *men*. The last place of residence for the Abells was Benton County, Oregon.

Charles died in 1997 at the age of 91 and Margaret in 2004 at the age of 95. Both Charles and Margaret are buried in the historical Crystal Lake Cemetery in Corvallis, OR. The National Register of Historic Places provides names of notable pioneers buried there (U.S. Department of Interior National Park Service 2004). However, as the pioneering woman forester in the Forest Service, Margaret Stoughton Abell is missing from the list—perhaps because women foresters are no longer unusual.

ACKNOWLEDGMENTS

Sarah Flick and Carin Clay, Library Technicians, at the National Forest Service Library in Fort Collins, CO provided document delivery services for several 1930 publications and a photograph.

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