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# THE IMPROVED ACRE: THE BESSE FARM AS A CASE STUDY IN LAND-CLEARING, ABANDONMENT, AND REFORESTATION

BY THERESA KERCHNER

*From the vantage of the twenty-first century, it seems remarkable that farmers, working with only hand tools and farm animals, converted over half of New England's "primeval" forests to tillage and pasture in the eighteenth and nineteenth centuries. This period was marked by transitions as farmers responded to new markets, changing family values, and declining natural resources. These forces brought an end to agrarian expansion and caused New England's iconic pastoral landscape to begin to revert to forestland. A case study based on the former Jabez Besse, Jr. farm in central upland Maine provides a link to New England's agricultural landscape history and the practices and values of families whose lives were focused on the improved acre. Theresa Kerchner earned a masters degree in Ecology and Environmental Science from the University of Maine in 2002 where she researched the land-use history of the Besse farm in Wayne. From 1997-2003 she worked with local classes and community members on several studies in natural history, local history, and art, and co-edited LIFE AND SCHOOLS IN WAYNE, 1890-1940; WAITING: AN ANTHOLOGY OF POEMS AND PHOTOGRAPHS OF A YEAR WITH HAY; IMAGES OF OUR COMMUNITY; and OUR YEAR WITH BIRDS: LOCAL LESSONS IN ORNITHOLOGY, ECOLOGY AND HISTORY. She is currently the Stewardship Director for the Kennebec Land Trust in Winthrop.*

**I**N 1635 Anthony Besse sailed from London, England, to settle in Sandwich, and then Wareham in Plymouth Colony. One hundred and forty years later, his descendants, Jabez, Sr. and Jabez, Jr., served in the Revolutionary War. When the war was over, the Besse family left Wareham as part of a southern New England out-migration driven by economic depression, population growth, and resource depletion.<sup>1</sup> In 1788 Jabez, Jr., his wife Patience, and their son Woodin arrived in Kennebec County, purchased 200 acres of forest and meadow near several former Massachusetts neighbors, and cleared a farm in New Sandwich Plantation — present-day Wayne, Maine. Their saga was part of a post-

Revolutionary movement that expressed the aspirations of most Americans in the eighteenth century: a quest for yeoman status, economic independence, and an opportunity to pass along land to future generations — all this to be accomplished by ownership of a small but prosperous parcel of cleared land. Despite a decrease in population from these upland districts beginning in 1850, the improved acre continued to define the ideal New England landscape well into the twentieth century. Changes in the Besse farm over five generations offer a model for understanding land-clearing, abandonment, and re-vegetation in Maine and New England between the late eighteenth century and the present.



Jabez's deed was entered in Lincoln County in 1798, ten years after his family first arrived in New Sandwich and the same year that the Town of Wayne was incorporated. Wayne's history is, in the words of its local chronicler George W. Walton, "the story of Maine, or of the smaller rural towns of Maine . . . [where] agriculture has always been the chief occupation of the people." Nearly everywhere in these upland districts, farm families supplied their own wheat, barley, oats, rye, and corn: food for the family and provision for the animals. The land they settled often belonged to an absentee merchant-proprietor, and the Besses arrived in the Kennebec Valley at a time when settlers and proprietors were engaged in a relentless conflict over use and ownership of these farms. The Besses' neighbors were involved in this back-country resistance, and the Besses' own settlement history suggests that they, too, were somehow involved. Unlike several of their neighbors, the Besses' chose to pay for their land rather than engage in contentious negotiations with the Kennebec Proprietors. Ten years after they arrived in New Sandwich Plantation, Jabez and Patience paid \$2.75 per acre for their 200 acres, a price far higher than the \$1.00 per acre many settlers believed was fair payment for unimproved lands. The price likely reflected the change in the value of the land after ten years of farming.<sup>2</sup>

By 1809, the date at which the assessors compiled the town's first inventory, Patience and Jabez had lived in the area for over twenty years and had raised six sons and five daughters. The 1809 inventory lists 104 Wayne families on 8,180 acres of farmland, each with an acre or more in tillage, meadow, pasture, and woods. At that time, farmers tilled an average of just over two acres and maintained an average of seven acres in mowing or meadow land, and six acres in pasture. The earliest families

Table 1 1809 Valuation or Inventory of the Town of Wayne

|                 | Woodin Besse (age 23)<br>Jabez Jr. Besse (age 44)<br>(89 acres total**) | Average<br>Acres on a<br>Wayne farm<br>(104 farms) | Value<br>Per acre<br>1809 -Wayne | Lowest/Highest<br>Value<br>Per acre<br>Kennebec County<br>1829-Greenleaf |
|-----------------|---|--|----------------------------------|--|
| Tilled land     | 5 acres   | 2.1  | \$12                             | \$8 - \$12   |
| Mowing land     | 12 acres  | 6.8  | \$13                             | \$8 - \$14   |
| Pasture land    | 12 acres  | 6.2  | \$8                              | \$4 - \$7  |
| Unimproved land | 60 acres  | 78.7   | \$8                              | .40 - \$1.60*  |

\* Wooded and other unimproved acres

\*\* No acres listed for Woodin. Other Besses in the 1809 Census are not descendants of Jabez Besse, Jr. Low acreage could reflect error in Census data, other family member in-holdings, or errors in measurement.

— the Besses, Atkinsons, Dexters, Fullers, Jennings, Manters, Perrys, and Wings — had improved larger amounts of land than their later-arriving neighbors (table 1). The values for improved land in Wayne were at the high end of those given for Kennebec County generally. Twenty years later in 1829, Maine surveyor Moses Greenleaf assessed the unimproved lands in Wayne at a much lower relative value, probably due to the loss in value in woodlands after lumbering, grazing, and abandonment to second growth. In 1832, forty-four years after moving to Wayne, Jabez Besse deeded portions of his original settlement lot to sons Woodin, Samuel, and Curtis; three years later Curtis sold his portion of the family farm to his oldest brother, Woodin, and left Wayne for work in the cotton mills in Lowell, Massachusetts.<sup>3</sup>

Jabez Besse's farm was a typical upland Maine farm, situated in a hill country ranging from 300 to 600 feet in elevation on a thin blanket of glacial till. Nearby are several lakes and ponds that cover about 25 percent of the town's total surface (fig. 1) The topography of Wayne is irregular and hummocky in places, and boulders, rocks, and glacial till cover a large portion of the land. The stone walls that delineate the old fields and property boundaries are evidence of a ground moraine that was deposited when the last glacier melted over 14,000 years ago (fig. 2). Farm journals refer to an identifiable bedrock outcrop known as the "Indian beadrock," evidence of a meta-sandstone of the Sangerville and Waterville formations, formed during the Silurian period 440 to 410 million years ago. Soils derived from this bedrock are nutrient-poor, with the exception of those that contain limestone (fig. 3).<sup>4</sup>

Archaeological excavations near the Besse homestead and in several other locations in Wayne indicate that native people inhabited this re-



*Figure 1.* Wayne, Kennebec County, Maine. The Besse family farm in Wayne was typical of other upland Maine farms, situated in a hill country ranging from 300 to 600 feet in elevation on a thin blanket of glacial till. Several nearby lakes and ponds cover about 25 percent of the town's total surface. The topography of Wayne is irregular and hummocky in places, and boulders, rocks, and glacial till cover a large portion of the land.

gion from 10,500 to 500 years ago during the Paleoindian, Archaic, and Woodland periods. The lakes and streams in Wayne were used as portage routes between the Kennebec and Androscoggin watersheds, and the native presence is well documented. The land between the Cobbosseecontee and Kennebec was rich in game and fish, and these resources were attractive to all three native cultures. The estimated population of Abenakis in this territory in 1600, prior to the introduction of European diseases, was in the range of 67-75 per 100 square miles; post-epidemic figures suggest declines to 16-18 per 100 square miles (By comparison, Wayne, with a current population of 1,112, has a density of 2,882 per 100 square miles). Most members of the Cannibas and the Anasagunticook tribes belonging to the larger Abenaki linguistic group, had left the Wayne area by the time the earliest white settlers arrived in 1773, although twentieth-century oral history in Wayne includes stories of Abenakis periodically traveling to Wayne to sell baskets.<sup>5</sup>

### The Pre-Settlement Forest

Since the melting of the last glacier approximately 14,000 years ago, forests have shaped the natural and cultural history of this region.



*Figure 2.* Rock dump and stone wall: border between wooded pasture and cultivated area. The stone walls that delineate the old fields and property boundaries are evidence of a ground moraine that was deposited when the last glacier melted over 14,000 years ago. Farm journals refer to an identifiable bedrock outcrop known as the “Indian bedrock,” evidence of a meta-sandstone of the Sangerville and Waterville formations, formed during the Silurian period 440 to 410 million years ago. Soils derived from this bedrock are nutrient-poor, with the exception of those that contain limestone. Photograph taken in October, 2002, courtesy of Theresa Kerchner.

Although the species composition of the pre-settlement forest was constantly altered by climate change, fire, wind storm, and pathogens, paleoecological studies at nearby Basin Pond in Fayette indicate that it was a mix of conifers and northern hardwoods, including pine, spruce, fir, hemlock, birch, oak, beech, maple, and ash. An increase in grass, ragweed, and dock pollen approximately 250 years ago marks the beginning of the agricultural era in Wayne.<sup>6</sup>

When surveyor Ephraim Ballard corrected the western boundary of the Kennebec Purchase in 1789, his records from New Sandwich Plantation included a number of tree species in what was then still largely a pre-settlement forest. Ballard’s notes suggest he saw a link between the agricultural value of the land and the trees that grew on it: “began W side of Crotched Pond & run by the side of the pond & found the places where a course S 34W from the end of the 15 miles from River came out of the pond 1 1/4 mile at a red oak tree & spruce tree ... 2nd mile a maple good land 3d mile a hemlock tree by a path and alder meadow 4th mile a hemlock tree by old Mr. Wings field pretty good land 5th mile a white oak tree white oak land.”<sup>7</sup> Ballard’s references to white oak, a species on the edge of its northern range, would have appealed to prospective settlers, since it was highly valued for cooperage and shipbuilding. More-

over, domestic animals favored white oak acorns over red oak due to their lower levels of tannic acid.

Changes in forest composition in the decades following settlement reflect a rising demand for timber and fuel wood. When Wayne was initially settled in the 1770s, Maine was 91.6 percent forested; a century later in 1872, after decades of land-clearing and lumbering, only 53.2 percent remained in forest. Most farmers harvested their woodlots to supplement their incomes, and in many towns lumbering was as important as farming. Shipbuilding in nearby Hallowell created a steady demand for white pine and white oak, and by 1872 the amount of lumber cut in the Kennebec Valley was second only to that of the Penobscot.<sup>8</sup>

### Meadowlands

During New England's early agrarian era, before the forests were converted to hayfields and pastures, meadows adjacent to rivers, streams, and ponds were valued as pastures and sources of fodder, even though wild meadow hay is coarser and less nutritious than domestic grasses. The historical record of these meadows, many of them abandoned beaver flowages, sheds light on pre-settlement ecology and early settlement patterns and practices. The May 1777 town meeting minutes for Winthrop, just east of Wayne, suggest the relative value of cultivated and wild grasses. In that year the town acted to "prevent Monopoly and Oppression" in the sale of hay by setting prices: "Good English hay" would be sold for nineteen pence per hundredweight, and "Meadow hay in the meadow" at nine and a half pence.<sup>9</sup>

The Besse meadow, at the south end of a swale on the farm, was part of their one-mile common boundary with Job and Elizabeth Fuller, who migrated to the District of Maine from Sandwich in 1773 to become the plantation's first settlers. Fuller, according to Walton's history of Wayne, was "forcibly impressed with the advantages to be derived from natural grass meadows, which in summer furnished grazing for stock, and hay for winter sustenance." Later deeds to a one-time Besse property hint at the uses of this twenty-acre Besse-Fuller wetland: "by a stone wall to land now or formerly known as Besse farm; thence continuing easterly by said Besse land to a corner in a *meadow* . . . thence turning and running southerly by said Besse land . . . to land now or formerly owned by one Davenport . . . at a *ditch or gully*." (Emphasis added) The practice of ditching was common in upland New England in the eighteenth and nineteenth centuries, and patterns of ditched wetlands are still visible in many locations.<sup>10</sup> Aerial photographs of the Besse farm taken in 1939

and 1989 confirm that the wetland drainage had been thus improved (See fig. 3).

Two native grasses in the Besse-Fuller wetland — rattlesnake (*Glyceria canadensis*) and blue-joint (*Calamagrostis canadensis*) — are recognized as valuable forage. The Maine Board of Agriculture annual report for 1884 explained that cattle ate *Glyceria canadensis* “very well in pasture and when made into hay,” and ate *Calamagrostis canadensis* “greedily . . . in the winter.” The Board considered blue-joint “as nutritious as Timothy,” and a “very desirable grass to grow on wet, boggy lands which are not drained.”<sup>11</sup>

The Besse Farm journals indicate that the family harvested meadow hay well into the early twentieth century. A 1910 entry noted that “Milton [Besse] and Harl [Manter] went up to Mother’s meadow and mowed all day. . . . Milton and Harl went up to meadow again . . . A fine day. Milton and Harl have been on the meadow all day, raked it all up and bunched it. Each brought home a load, nearly dark when they came.” As late as 1930, farmers in Leeds, southwest of Wayne, harvested meadow hay on the wetlands adjacent to Androscoggin Lake and the Dead River, and they pastured cattle on this same meadow until approximately 1950 (fig. 4). These meadows grew on a point of land seasonally inundated by the springtime reverse flow of the Dead River in Leeds and Wayne. The construction of the Dead River Dam in 1933 altered these flooding patterns, making it difficult for farmers to pasture their cattle on the river and lake meadows.<sup>12</sup>

Farmers who relied on meadows for pasture and hay often came into conflict with local mill owners when streams, lakes, and rivers were dammed for water power. Dams changed the shape of ponds and wetlands, altered water levels, and in many cases flooded farmers’ meadows. In 1880, Wayne farmer Cyrus Stevens sued a Monmouth mill owner in Kennebec County Superior Court to recover damages based on the state’s Mill Act. Although Stevens lost three acres of his meadow due to water-level changes on Wilson Pond, he lost his case in the Superior Court in 1884. The court transcript indicates that he mowed red top (*Agrostis gigantea*) and foul meadow grass (*Poa palustris* or *Glyceria striata*), both well known for their forage value.<sup>13</sup>

### Muck and Peat

By the early to mid-nineteenth century, many of New England’s farming communities were addressing issues related to declining rural populations, midwestern market competition, and soil productivity.

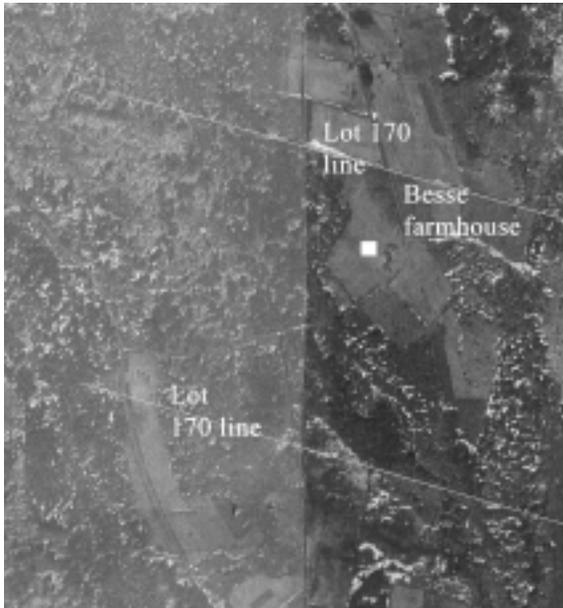


Figure 3 and 4. 1939 and 1989 aerial photographs, with cultivated fields visible. The practice of ditching was common in upland New England in the eighteenth and nineteenth centuries, and patterns of ditched wetlands are still visible in many locations. These aerial photographs of the Besse farm taken in 1939 and 1989 confirm that the wetland drainage had been thus improved.



Among the suggestions for improving farm competitiveness was the practice of harvesting muck to improve run-down, nutrient-poor fields and mowing lands. In 1858 a committee of the Maine Board of Agriculture compiled a variety of comments on the use of muck as an agent for enriching the soil, and in light of the facts gathered, recommended combining muck and manure as a fertilizer. "We deem the farmer who has an ample deposit of muck, has a mine of wealth that will prove more productive under proper management, than any of the [gold] diggings of California or Australia." Many farmers used the terms "muck" and "peat" interchangeably when referring to organic material dug from bogs and used for stable litter and fertilizer.<sup>14</sup> Although harvesting and hauling muck was time-consuming and challenging, farmers were encouraged to take advantage of these local deposits in order to maintain the productivity of their fields and pastures.



This practice was described in the Board's 1856 Agricultural Report and in the 1917 Maine Public Utilities Commission Report by State Geologist Freeman F. Burr. Burr, a Wayne resident, explained how Wayne dairy farmer Harvey Lowell harvested and used this resource: "the peat is dug with an ordinary shovel, . . . and the material is dumped in a convenient place near the barn, in the open air . . . He allowed each lot to remain in the horse stalls until it is thoroughly dampened." Lowell's peat bog ran to depths of twenty feet, but according to Burr, "this seems to be the only instance of the present use of peat in [Livermore Quadrangle] . . . although it is true that years ago some was hauled directly to the fields from several of the boggy areas." Burr's report suggests that Lowell, who lived on Morrison Heights about a mile from the Besse farm, was likely harvesting peat from the twenty-acre meadow on the Besse-Fuller boundary.<sup>15</sup>

### Wayne and Kennebec County, 1850 to 1880

In 1816 Moses Greenleaf surveyed Kennebec County in his *Statistical View of the District of Maine* and noted the extraordinary productivity of the county's agriculture: "whether the superiority . . . is owing to superior natural fertility of the soil or to a higher state of cultivation will not here be decided," he explained; "the county possess many enterprising and intelligent gentlemen, who have devoted more attention to the science as well as the practice of agriculture, than perhaps may be found in any



*Figure 5.* The Besse Farm journals indicate that the family harvested meadow hay well into the early twentieth century. As late as 1930, farmers in Leeds, southwest of Wayne, harvested meadow hay on the wetlands adjacent to Androscoggin Lake and the Dead River, and they pastured cattle on this same meadow until approximately 1950. These meadows grew on a point of land seasonally inundated by the springtime reverse flow of the Dead River in Leeds and Wayne. The construction of the Dead River Dam in 1933 altered these flooding patterns, making it difficult for farmers to pasture their cattle on the river and lake meadows. Photo circa 1900, *Lewiston Daily Sun*, December 21, 1963—“A Memory of Years Long Past.”

other part of the district.”<sup>16</sup> At a time when Kennebec County was rising to a position of prominence in farming in Maine, its leading figures were engaged in the promotion of scientific agriculture. These included the Vaughans in Hallowell, the Gardiners in Gardiner, and Samuel and Elijah Wood and Ezekiel Holmes in Winthrop. Each was instrumental in disseminating information about better crops, new farming techniques, and cattle breeding. Benjamin Vaughan, his son William Oliver Vaughan, Dr. Sylvester Gardiner, and his son Robert Gardiner were all gentlemen-farmers who experimented with crops and livestock; the elder Gardiner founded the Gardiner Lyceum, an institute for educating farmers and mechanics; and Ezekiel Holmes edited the *Maine Farmer* through much of the nineteenth century. Most certainly agricultural promoters like these influenced farmers like the Besses.<sup>17</sup> During this period, Kennebec



*Figure 6.* In 1851, as agriculture was reaching its zenith in the interior Maine towns, Maine artist Mary Stanton House painted an exceptional representation of Wayne and Leeds and the surrounding landscape. On the far side of the lake a railroad locomotive crosses the landscape from right to left, but the most prominent feature in the foreground is the Old Wayne Road leading southeastward to Winthrop, passing along the western border of the Besse homestead. Roads like these connected local merchants and manufacturers to port cities on the Kennebec. *Leeds Center and Wayne, Maine, overlooking Great Androscoggin Pond.* Painting by Mary Stanton House, 1851. Courtesy of the Town of Leeds, Maine.

County was also recognized for its home industries, mills, and factories, the most prominent in Wayne being North Wayne Tool Company and the Johnson Woolen Mill and Shovel Handle factories.

In 1851, as agriculture was reaching its zenith in the interior Maine towns, Maine artist Mary Stanton House painted an exceptional representation of Wayne and Leeds and the surrounding landscape (fig. 6).<sup>18</sup> On the far side of the lake a railroad locomotive crosses the landscape from right to left, but the most prominent feature in the foreground is the Old Wayne Road leading southeastward to Winthrop, passing along the western border of the Besse homestead. Roads like these connected local merchants and manufacturers to port cities on the Kennebec:

The circumstances attending the laying out of the OLD WAYNE ROAD were such to be worthy of extended notice. . . .

The road . . . was . . . nearly fifty years the great thoroughfare by which the inhabitants of Wayne, Livermore, and the upper Androscoggin were connected with tide water at Hallowell. At the Hallowell crossroads, now Manchester Forks, we have seen when the sleighing was good in the winters of 1814, '15, '16, '17 whole lines of teams and pungs like an unbroken procession, moving into Hallowell, laden with wheat and other farm products.<sup>19</sup>

During the height of Wayne's agricultural development, the US Censuses of Agriculture and Population documented production on individual farms, providing detailed information about the number of improved acres, the quantities of crops grown, and number of farm animals raised. Due to changes in the categories used, it is not possible to accurately compare agricultural data over the last decades of the nineteenth century, but overall trends are discernable. In 1860 there were 55,698 farms in Maine, and the average farm covered 103 acres, with forty-nine acres "improved," or in fields. This average farm had three cows, eight sheep, one horse, and two oxen and produced 210 pounds of butter, thirty-two pounds of cheese, twenty-six pounds of wool, seventeen tons of hay, twenty-eight bushels of Indian corn, and five bushels of wheat (Table 2). Kennebec County listed 5,591 farms, where the average farmer owned eighty-one acres, including fifty-one acres of improved land, or 63 percent of the total. Wayne had 120 farms, including the farm then owned by William Granville Besse.<sup>20</sup> The average Wayne farm was eighty-nine acres with approximately sixty-two of them improved. In many ways, Besse's farm looked like a prosperous version of the average

Table 2: 1860 Productions of Agriculture for William Besse, Wayne, Kennebec County & Maine

|                 | Besse             | Wayne        | Kennebec County | Maine        |
|-----------------|-------------------|--------------|-----------------|--------------|
|                 | William Granville | 120 Farms    | 5,591 Farms     | 55,698 Farms |
|                 |                   | Average Farm | Average Farm    | Average Farm |
| number of acres | 130               | 89           | 81              | 103          |
| improved acres  | 80                | 62           | 51              | 49           |
| milk cows       | 5                 | 3.1          | 2.6             | 3            |
| butter (pounds) | 450               | 259          | 220             | 210          |
| cheese (pounds) | 400               | 120          | 40              | 32           |
| Sheep           | 16                | 6.7          | 7.8             | 8            |
| wool (pounds)   | 50                | 25           | 25              | 26           |
| hay (tons)      | 25                | 18.2         | 19              | 17           |
| wheat (bushels) | 7                 | 4.5          | 1.6             | 5            |

Maine farm. Its 130 acres included eighty acres of improved land, and the Besses produced 450 pounds of butter, 400 pounds of cheese, fifty pounds of wool, twenty-five tons of hay, ninety bushels of Indian corn, seven bushels of wheat, and pastured five cows, sixteen sheep, one horse, and two oxen.

By 1860 four generations of Besses had worked the land that Jabez purchased in 1798, always with more than one generation on the farm at the same time. The farm's higher-than-average production could have been a function of the Besses' large extended family, labor being a critical resource in the mixed-husbandry farming system. This pattern of multi-generational farming, with its associated economic independence, was a deeply entrenched cultural ideal in the nineteenth century.<sup>21</sup>



By 1870 the number of farms peaked in Kennebec County. Wayne's population began to decline in 1850 and continued throughout the second half of the nineteenth century. A number of factors contributed to this out-migration, including new opportunities for employment in the growing New England mill towns and competition from midwestern produce. Despite the decline in population, the number of farmers and the number of improved acres in Wayne stayed approximately the same until the end of the nineteenth century, with an average of 7,000 improved acres out of 11,000 total farm acres (64 percent). Thus mid-century demographics did not translate into farm abandonment "While Wayne, like her companion towns, throws a mournful glance into the brilliant past, and laments her depleted population . . . she has not like many towns of Kennebec, to deplore run down farms and dismantled buildings which many of our Maine towns present," agriculturalist Samuel Boardman explained. The percentage of improved acres in Wayne in the second half of the nineteenth century is consistent with patterns in Kennebec County, where roughly 5,500 farms had improved approximately 291,000 acres out of a total of 465,000 acres — or 63 percent (Table 3). These proportions were also consistent with data collected in a forest inventory for the Tenth Census of the United States, which found that lumbering and land clearing in this region left only four tenths of this county covered in woods, most of this being second-growth. Merchantable spruce and pine had been everywhere removed, but much of the farmland in Kennebec County was reforesting with

Table 3: Population, Number of Farms &amp; Improved Acres 1850-1880, Wayne and Kennebec County

|                           | 1850    | 1860    | 1870    | 1880    |
|---------------------------|---------|---------|---------|---------|
| <b>Wayne</b>              |         |         |         |         |
| Population                | 1,367   | 1,192   | 938     | 950     |
| Improved acres            | 7628    | 7393    | 6837    | 6983    |
| Unimproved acres          | 3454    | 3261    | 3867    | 4487    |
| Total acres               | 11,082  | 10,654  | 10,704  | 11,470  |
| Number of farms           | 130     | 120     | 142     | 131     |
| Average size farm (acres) | 85      | 89      | 75      | 88      |
| <b>Kennebec County</b>    |         |         |         |         |
| Population                | 57,908  | 55,655  | 53,223  | 53,061  |
| Improved acres            | 248,637 | 285,393 | 289,994 | 333,554 |
| Unimproved acres          | 201,511 | 164,960 | 172,207 | 146,346 |
| Total acres               | 450,148 | 450,353 | 462,201 | 479,900 |
| Number of farms           | 5,256   | 5591    | 5,757   | 5,431   |
| Average size farm (acres) | 86      | 81      | 80      | 88      |

pine, and the wooded area of the county was increasing. Kennebec County was still, next to Penobscot, “the most important lumber manufacturing county in the State.”

Those farmers who chose to stay in Wayne were probably influenced by the scientific “improvement” promotions disseminated by Ezekiel Holmes’s *Maine Farmer*, the county and local agricultural clubs, the state Board of Agriculture, and the Maine College of Agricultural and Mechanical Arts, all active in the latter part of the nineteenth century. The census data for 1850 to 1880 in Wayne indicates that roughly half of the families, approximately 130, still identified themselves as farmers. The Besse farm’s production in the later nineteenth century reflects trends that were common during this era of farm improvement, as the farm was shifting from mixed cropping and lumbering to market farming, including orchard and dairy products.<sup>22</sup>

### Farming, Family, and Conservation: 1876 to 1998

In 1876, William Granville Besse’s land was included in a list of eight farms under consideration as possible sites for a town farm (fig. 7). A survey of the potential acquisition, although brief, describes the condition of the farm almost one hundred years after Jabez Besse, Jr. claimed it from the forest:

We the undersigned a Committee chosen at a meeting held by the Town of Wayne for the purpose of purchasing a farm for the use of said Town on which to support its poor having attended to that duty beg leave to make [the] following report[:] Your committee received eight proposals and viewed seven farms 1st. W.G. [William Granville] Besse's contains 100 acres of land which is offered for the sum of \$2800, it is a very good farm of good strong land quite well fenced; a considerable portion of which is stone walls, it has a very good wood-lot — a good orchard of old and young trees a considerable portion engrafted good farm buildings in good repair, if anything is lacking it is the necessary amount of pasturing.<sup>23</sup>

William Granville Besse offered the family farm for sale one year after the death of his father, Woodin Besse. His mother, Betsy Kent Besse, had died three years earlier in 1872. This earlier generation had been raised to associate farmland ownership with family independence, but by William Granville Besse's time, this tradition was dissipating in response to shifting cultural values and economic conditions. The Town Farm report on the Besse farm noted a condition that was widespread in older New England agricultural towns: a shortage of pastureland. This, along with changing market trends, probably influenced William Granville's thinking about ownership of the land.<sup>24</sup>

Despite these circumstances, the Besses remained on the farm, and in their 1906-1912 farm journal, Milton, William Granville's son, and his fourth wife, Annie True Besse, documented a seasonal pattern of work that had not changed dramatically in the 120-year history of the Besse farm. Milton and Annie Besse would be the last of the Besse descendants whose daily lives resembled those of the farm's earlier occupants. They grew a traditional mix of barley, potatoes, oats, Indian corn, and vegetables; raised beef cattle, chickens, and hogs; and sold apples, pears, butter, and hens for the Boston market and sweet corn to local canneries. Their journals detail the planting, cultivating, and harvesting cycles and the seasonal patterns of house chores, woods work, manure-spreading, fence-repair, mowing, and stone removal. The daily entries also document their active community participation, with births, marriages, and deaths of family and community members; neighborly visits, civic and church responsibilities; and non-farm economic activity. The journal mentions moving cattle off the farm to feed, reinforcing the 1876 observation about the scarcity of pastureland.

We The undersigned a Committee  
 chosen at a meeting held by the  
 Town of Wayne for the purpose of  
 purchasing a farm for the use of said  
 town ~~we~~ wish to suggest <sup>that</sup> those poor  
 having attended to that duty beg leave  
 to make the following report  
 Your Committee received eight proposals  
 and viewed seven farms -  
 1<sup>st</sup> W. G. Besse's contains 100 acres of land  
 which is offered for the sum of \$2800.  
 It is a very good farm of good strong  
 land quite well fenced, a considerable  
 portion of which is stone wall, it has a  
 very good wood lot - a good orchard  
 of old and young trees a considerable portion  
 engrafted. good farm buildings in good  
 repair, if anything is lacking it is the  
 necessary amount of pasturing

Figure 7. Report from the Town Farm Search Committee, Town of Wayne, October/November, 1876. In 1876, William Granville Besse's land was included in a list of eight farms under consideration as possible sites for a town farm. This survey of the potential acquisition, although brief, describes the condition of the farm almost one hundred years after Jabez Besse, Jr. claimed it from the forest. Town of Wayne Historical Collection.

In 1911, Annie Besse recorded a milestone in the Besse family history: "Grandma [Elizabeth Courier Besse] passed away at ten this AM[;] Grandma's funeral at 1pm.....Some stormy. We are alone and it seems very quiet." Two years later, Annie and Milton sold the farm to Earl Hutchins, the first non-family owner in 125 years.<sup>25</sup> The decision to sell after Milton's mother died was similar to the inclination that Milton's father William had in 1876. These patterns suggest that at a time when the farm's economic viability was declining, the passing of one generation influenced the next generation's resolve to remain on the farm.

In 1916, Hutchins sold the land to Milton's nephew, Frank Besse. Elizabeth's grandson, Frank began to buy back the original family land,

beginning with the farmhouse (fig. 8). Eighty-two years later, Albion Besse, Frank's son and Jabez Besse's great, great, great grandson, donated a portion of the original family homestead to a community land trust with the stipulation that it would remain as a forest preserve. In an interview Besse noted that he wanted "the forest to go back to what it was like when my ancestors first arrived in Wayne."<sup>26</sup> Albion also deeded a three-acre parcel to one of his own sons, William, the eighth generation Besse to own this land, and sold the remaining acreage and house.

### **Landscape History**

Is the Besse farm returning, as Albion Besse desired, to its pre-settlement state? In the mid-nineteenth century, as agriculture reached its climax in New England, Henry David Thoreau took note of the widespread pattern of farm abandonment and re-forestation in his home town of Concord, Massachusetts, and drew some interesting conclusions about secondary forest succession patterns and their relationship to prior agricultural land uses. Many of the questions Thoreau pondered still intrigue forest researchers. At the Harvard Forest in Petersham, Massachusetts, several generations of scientists have been at work studying the relationship between agricultural land-use history and re-vegetation: what predetermines these new forest ecosystems? Is it soil type, slope, hydrology, or the nature of prior cultivation, pasturing, and woodlot harvesting? The Harvard studies suggest that historical factors influence vegetation patterns for many decades after farms are abandoned, since agricultural practices change soil nutrients and many other site conditions, favoring one new species or the next, depending on how the land was farmed.<sup>27</sup>

In 1998, reconnaissance surveys of the former Besse farm indicated that historic agricultural practices could have likewise influenced modern vegetation at this site. The agricultural practices themselves were partially determined by existing physical conditions, including soil, hydrology, and aspect (direction of slope), but the re-vegetation patterns showed a number of distinct boundaries that did not appear to be related to these natural conditions. These patterns are discernible on the ground and in aerial photographs. At the time of the survey, the 132-acre farm was wooded with the exception of a three-acre hayfield and the one-acre homestead site. Since timber harvesting had been minimal since the early 1900s, the woodlands contained several mature forest stands (See fig. 3). In several areas, distinct botanical patterns — trees

Table 4 Tree strata - species by relative basal area in four land uses

|                               |                           |       |
|-------------------------------|---------------------------|-------|
| Former Cultivated Areas       |                           |       |
| white pine                    | <i>Pinus strobus</i>      | 81%   |
| red maple                     | <i>Acer rubrum</i>        | 14%   |
| red oak                       | <i>Quercus rubra</i>      | 1.20% |
| eastern hemlock               | <i>Tsuga canadensis</i>   | 1.00% |
| Former Wooded Pasture-Woodlot |                           |       |
| white pine                    | <i>Pinus strobus</i>      | 48%   |
| eastern hemlock               | <i>Tsuga canadensis</i>   | 41%   |
| Former Open Pasture           |                           |       |
| red maple                     | <i>Acer rubrum</i>        | 41%   |
| white pine                    | <i>Pinus strobus</i>      | 25%   |
| northern white cedar          | <i>Thuja occidentalis</i> | 15%   |
| Former Woodlot                |                           |       |
| red oak                       | <i>Quercus rubra</i>      | 32%   |
| white pine                    | <i>Pinus strobus</i>      | 20%   |
| white ash                     | <i>Fraxinus americana</i> | 16%   |
| eastern hemlock               | <i>Tsuga canadensis</i>   | 12%   |
| red maple                     | <i>Acer rubrum</i>        | 9%    |
| sugar maple                   | <i>Acer saccharum</i>     | 6%    |

and understory — were separated only by ten to twenty feet and did not appear to be related to natural environmental conditions.<sup>28</sup>

The study targeted thirty-seven acres embracing four known historic land uses: cultivated fields/hayfields; a wooded pasture/woodlot; a sparsely wooded pasture; and a permanent woodlot (fig. 9). During the summer of 2001, three 26.2 feet radius stratified random plots (2,152 square feet) were established in each of the four historic land use areas. In addition to vegetation data, slope, aspect, and any indication of historical land use, such as stone walls, pit and mound topography, barbed wire, or rock dumps, was recorded. The 2000 Maine Natural Areas Program's natural community survey criteria was used for data collection for the tree, sapling, shrub, and herb layers. The analysis assessed these four land uses and the trees and herb layers they contained, taking into account environmental variables like soil chemistry, slope, and aspect. The results showed that areas intensively farmed for crops such as corn, wheat, barley, oats, vegetables, or hay reverted to even-aged stands of white pine (81 percent relative basal area) and red maple (14 percent relative basal area) (See Tables 4 and 5). In the herb layer the most abun-



Figure 8. Albion Besse and his mother, Florence Besse, circa 1819. Courtesy of the Wayne Historical Society Collection.

Table 5

| Table 5 Herb layer woody and herbaceous species *   |                                   |                    | Average Percent Cover** | Average Richness*** |
|---|-----------------------------------|--------------------|-------------------------|---------------------|
| Former Cultivated Areas   |                                   |                    | 1-5%                    | 8                   |
| red maple   | <i>Acer rubrum</i>                | all plots          |                         |                     |
| white ash   | <i>Fraxinus americana</i>         | all plots          |                         |                     |
| Canada mayflower  | <i>Maianthemum canadensis</i>     | all plots          |                         |                     |
| starflower  | <i>Trientalis borealis</i>        | two of three plots |                         |                     |
| Former Wooded Pasture-Woodlot   |                                   |                    | 1 to 24%                | 6.3                 |
| Canada mayflower  | <i>Maianthemum canadensis</i>     | two of three plots |                         |                     |
| starflower  | <i>Trientalis borealis</i>        | two of three plots |                         |                     |
| red oak   | <i>Quercus rubra</i>              | two of three plots |                         |                     |
| balsam fir  | <i>Abies balsamea</i>             | all plots          |                         |                     |
| red maple   | <i>Acer rubrum</i>                | all plots          |                         |                     |
| white pine  | <i>Pinus strobus</i>              | two of three plots |                         |                     |
| Former Open Pasture   |                                   |                    | 1 to 24%                | 11.3                |
| red oak   | <i>Quercus rubra</i>              | all plots          |                         |                     |
| white pine  | <i>Pinus strobus</i>              | all plots          |                         |                     |
| balsam fir  | <i>Abies balsamea</i>             | two of three plots |                         |                     |
| black cherry  | <i>Prunus serotina</i>            | two of three plots |                         |                     |
| a sedge   | <i>Carex spp.</i>                 | all plots          |                         |                     |
| interrupted fern  | <i>Osmunda claytoniana</i>        | two of three plots |                         |                     |
| Christmas fern  | <i>Polystichum acrostichoides</i> | two of three plots |                         |                     |
| Canada mayflower  | <i>Maianthemum canadensis</i>     | two of three plots |                         |                     |
| Former Woodlot  |                                   |                    | 1 to 24%                | 9                   |
| lady fern   | <i>Athyrium felix-femina</i>      | two of three plots |                         |                     |
| cinnamon fern   | <i>Osmunda cinnamomea</i>         | two of three plots |                         |                     |
| balsam fir  | <i>Abies balsamea</i>             | two of three plots |                         |                     |
| *Only those species found in two or more plots in a land use area are listed.   |                                   |                    |                         |                     |
| **The percent cover when averaged for the four, one square meter plots within each 7.98 meter radius plot (woody and herbaceous species). |                                   |                    |                         |                     |
| ***Average richness: combined herbaceous and woody species for all of the plots   |                                   |                    |                         |                     |

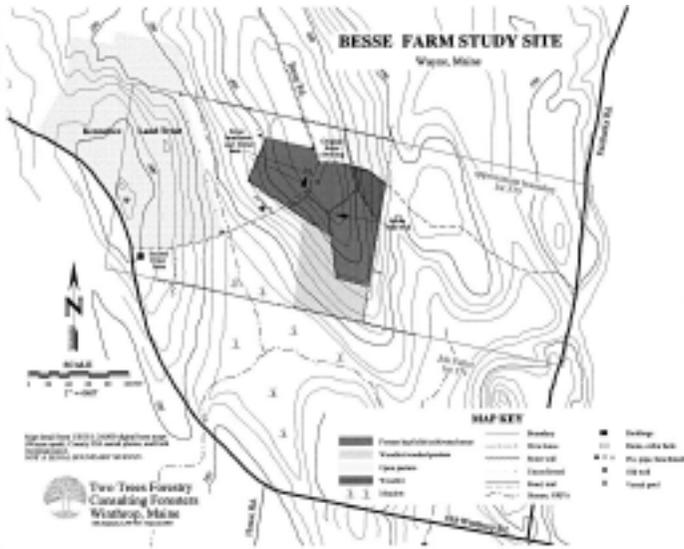


Figure 9. Besse Farm Study site with approximate Kennebec Purchase lot lines, historical land use areas, farm houses, Indian Bead Rock and meadow, 2005.

dant species were red maple and white ash seedlings, Canada mayflower, and starflower. During the field study, two herbaceous species that were not identified in study plots were found to be very common in this land use area: shinleaf and hay-scented fern. Other studies of historical farms and woodlands in New England indicate similar species, with the exception of white ash.<sup>29</sup>

The former open pasture was dominated by red maple (41 percent), white pine (25 percent), and northern white cedar (15 percent). This area had the richest herb layer in terms of number of species per unit, including red oak, white pine, balsam fir, and black cherry seedlings, interrupted fern and Christmas fern, Canada mayflower, and a sedge species.

In the former woodlot/wooded pasture, white pine (48 percent) and eastern hemlock (41 percent) were the dominant species. Very few herbaceous species were found in this area. The two that were identified, Canada mayflower and starflower, are associated with either secondary woodlands or with soil that has low levels of organic matter.

The former woodlot supported the greatest ecological complexity, with an uneven-aged forest of northern hardwoods and conifers and less

common understory species. The forest stand was dominated by red oak (32 percent) and white pine (20 percent), but a number of other tree species were present, including white ash (16 percent), eastern hemlock (12 percent), red maple (9 percent), and sugar maple (6 percent). This is the only land-use area that was not dominated by white pine or red maple. Three species found in the woodlot herb layer — Jack-in-the-pulpit, New York fern, and long beech fern — could have been responding to the moisture gradient on this slope. A number of tree and herb species, including sugar maple, white ash, northern white cedar, and eastern hop hornbeam, are indicators of a more nutrient-enriched site.<sup>30</sup> Two tree species found in this area but not in the study plots, American basswood and yellow birch, are also often found in nutrient-rich sites.

In addition to the data collected in vegetation plots, field observations showed that species diversity increased at the base of the slopes in each of the land-use areas. This increase in diversity could be related to natural colluvial processes, the downslope migration of nutrients from farmland erosion, or the reduced degree of disturbance that is common on steeper slopes. In particular, the study identified two calcium-indicator species in the tree, shrub, and herb layers at the base of the slopes in three of the areas: northern white cedar and eastern hop hornbeam. “Down-slope” migration of soil nutrients on farmland was considered to be a significant agricultural problem in the nineteenth century.<sup>31</sup>

### **Vegetation Summary**

The vegetation analysis in this case study sheds light on the connections between farming history and forest vegetation. In the case of the Besse farm, those areas that were in cropland or hayfields reverted to even-aged stands of white pine and red maple. At the other end of the land-use spectrum, the farm woodlot fostered an uneven-aged stand of northern hardwoods, conifers, and more true woodland species. The vegetation results in the other two land-use areas, woodlot-wooded pasture and open pasture, demonstrate that small variations in topography, bedrock, hydrology, or soils can create unique micro-site conditions that influence plant species composition.

In 1864 Vermont’s famous conservationist George Perkins Marsh observed that a “life of incessant flitting” was inimical to an ethic of conservation: an unsettled migratory people remained oblivious to “the execution of permanent improvements of every sort, and especially of those which, like the forest, are slow in repaying any part of the capital ex-

pended in them.”<sup>32</sup> Many farmers in the eighteenth and nineteenth centuries cleared and abandoned their New England farms, leaving the job of conserving or restoring these exhausted lands to those who stayed behind. Woodlands now occupy these abandoned farms, and their structure and composition are connected to historic agricultural land uses. The 200-year history of the Jabez Besse farm is still visible on the land, inscribed in ditched wetlands, stone walls, remnants of barbed wire, and a complex of ecological variables — all part of the incidental legacy of the cycle that commenced with the clearing of the forest and ended with reforestation. This case study highlights the connections between farming history and New England’s contemporary forested landscape. In addition, it underscores the connection between long-term land ownership and conservation values. The 1998 donation of the permanently protected Besse Historic Conservation Area forest preserve also reveals a sense of common good that can come from a long history of family connectedness to a community and to the land.

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