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Bloodwort *(Rumex sanguineus)*, a species of dock, from the 1636 edition of John Gerard's *The herball, or, Generall historie of plantes*. This plant, along with other species of dock, was used as a remedy for afflictions of the blood, bowels, and skin. Courtesy of National Archives.

FROM WANTED TO WEEDS: A NATURAL HISTORY OF SOME OF NEW ENGLAND'S INTRODUCED PLANTS

By Jessamy R. Luthin

When the Europeans first colonized New England they initiated the process of transforming the landscape into something more familiar. In order to ensure access to food and medicine and recreate the pastoral landscape of the Old World they brought with them a variety of known plant species for cultivation. With time, shifts in medical practice, agriculture, food preservation, and dietary preferences, reliance on these plants declined. As knowledge of these plant species disappeared from popular consciousness, so too did they disappear into the wilds of America, exploiting new found ecological niches, and becoming New England's naturalized flora. Human labor was essential in creating and sustaining the habitats in which these new species could thrive, but plant invasions are as much a product of nature as they are of culture. Jessamy Luthin completed a BA in History with a minor in Sustainable Agriculture from the University of Maine in 2013. She is now pursuing a certificate in midwifery at Birthwise Midwifery School in Bridgton, Maine.

WHEN THE Europeans first arrived in the Americas, they began the process of transforming the landscape into something more familiar. Desiring, as they did, to recreate the pastoral landscape of the Old World and ensure access to familiar foods and medicine, they brought with them a variety of plant species to serve these purposes. Over time, their reliance on these plants dwindled, and as knowledge of these species disappeared from popular consciousness, so too did the plants disappear into the wilds of New England. Exploiting their new ecological niches, a great number of them became naturalized, eventually settling into the region with a success equal to the Europeans themselves. As William Cronon acknowledged in his pioneering environmental study of New England, European migrants and their do-

mesticated plants and animals created an entirely new environment in the New World, introducing scores of new species essential to their survival and economic prosperity. Human labor was essential in creating and sustaining the habitats in which these new species thrived.[1] But the history of these species, from their arrival in New England to their current distribution in North America, demonstrates that plant naturalizations and invasions are as much a product of nature as they are of culture. The success of a particular species is often determined not entirely by human beings but by the combination of biological factors and social influences that unite the fate of humans and their plant protégées.

The region's first settlers arrived knowing little of the land or people they might encounter. Firsthand accounts of explorers like Verrazano, Gosnold, Pring, and Champlain were limited to the scattering of coastal points where they had made landfall. Worse, the reports were often misleading. Enthralled by the new lands they encountered, explorers exaggerated what Richard Hakluyt called the "merchantable commodities." The reports from New England's first visitors were overwhelmingly positive, gushing with tales of New England's plenty. "The aboundance of Sea-Fish," Francis Higginson wrote, "are almost beyond believing"; the alewives William Wood recorded, arrived "in such multitudes as is almost incredible, pressing up such shallow waters as will scarce permit them to swim." William Wood described the region's prime and plentiful timber as "straight and tall, some trees being twenty, some thirty foot high before they spread forth their branches."[2] Verrazano wrote that New England soils were well "adapted to cultivation . . . and of so great fertility that whatever is sown there will yield and excellent crop," and Gosnold reported that the seeds he had sown at Cuttyhunk "sprouted out in one fortnight almost half a foot."[3] Portrayals such as these left readers believing, as John Smith said, that "nature and liberty affords us that freely which in England we want, or it costeth us deerly."[4]

These reports encouraged the impression that settlers could "survive until their first harvest simply by living as the Indians supposedly did, off the unplanted bounty of nature." The results were disastrous. Lack of food, supplies, and preparation for New England's harsh winters meant that many starved. At Plymouth alone, half the colony died before the first winter's end. In 1631, Massachusetts colonist John Pond wrote to his parents, "I pray you remember me as your child. . . . We do not know how long we may subsist, for we cannot live here without provisions from ould eingland."[5] Many early settlements were indeed short lived. Thomas Weston's1622 Weymouth colony on Plymouth's northern shore lasted less than twelve months, and the settlement Robert Gorges estab-

A map taken from the reprint of William Wood's *New Englands Prospect* shows southern New England, as it was cultivated in 1635. The illustration is taken from a copy of the map in the archives of the Massachusetts Historical Society and is dated one year after the publication of Wood's book.

lished in the same area a year later suffered much the same fate.[6] Yet these failures were not entirely in vain. Each return voyage afforded those who followed a more complete picture of the environment they would confront, so that by the time of the Great Migration of 1630-1640, those who arrived did so with a practical eye towards what they might encounter.

As Ann Leighton described it, the "Puritan migration was deliberate, determined and carefully planned."[7] Expecting neither a lush paradise nor friendly natives to provide for them, the Puritans anticipated the need to sustain themselves on local resources when ships' stores ran low. In Europe in the seventeenth century, herbal medicines were often crucial to surviving deadly illnesses or epidemics, to say nothing of the common household ills.[8] Rather than pin their hopes on local medicines, settlers found it relatively easy to transport familiar European plants and introduce and cultivate them.

On each voyage, the seeds, bulbs, and cuttings of Old World herbs were carefully packed and transported across the Atlantic along with the Puritans' other most precious belongings. Once settled, colonists routinely arranged to have additional plants shipped overseas.[9] Massachusetts Bay's John Winthrop Jr., for instance, compiled a "Bill of Garden Seeds" in 1631, which included a number of species prized for their medicinal uses.[10]

Packing plants to ensure their survival proved difficult, and the

available record describing these challenges speaks to the extent to which seeds and plants were valued. William Wood, recounting his 1633 voyage to New England, wrote that "commonly, the seede that cometh out of England is heated at Sea, and therefore cannot thrive on land." Assuring that plants endured the voyage was as much an issue for ship captains as it was for the colonists. Responding to another order made by Winthrop, this time for apple trees and other plants, Joseph Downing wrote a letter abnegating responsibility for their quality. "For if the ship master hath not especiall care of them by the way," he wrote, "in on[ly] ten dayes they will quite wither and so never grow."[11]

Upon arrival, herbs were made at home in the gardens of the early colonists. Planted just outside the doorway, the colonial kitchen garden became a repository of helpful herbs. "The first, most important plants" cultivated by the new arrivals "were for reducing fevers, numbing pain, aiding in childbirth, soothing sore throats, expelling worms, making physics and tonics, stanching blood, and laying out the dead." While plants were also used to make dyes, insect repellents, and metal polishes, these and simple ornamental species "had to wait."[12]

Colonists also brought with them the practice of English herbalism. During New England's early history, medical practice was left almost entirely to the family. Physicians were scare, even in England, during the seventeenth century, and most were reluctant to sacrifice their comfortable lives at home for New England's unforgiving shores. Of those who did migrate early on, few stayed. Giles Firmin of Ipswich found himself "unable to make a living" in New England and returned home. "The practice of the 'physick' would seem to have depended chiefly upon anyone who felt the urge and had a flair for healing."[13] Frequently, medical care fell within the purview of women—"doctresses" or midwives who planted and tended herb plots in the gardens beyond their doors.[14] In New England, the idea of a community herbalist lingered into the nineteenth century. Maine midwife Martha Ballard, for instance, was called upon repeatedly to recommend plant-based treatments for a variety of afflictions.[15] In addition to their own remedies, most colonists owned copies of the most popular and reliable herbals of the day, such as those by Gerard, Culpeper, and Parkinson, to aid in the identification, "vertues," and preparations of various plants. Even well-to-do colonists like the Winthrops were not without a guide; John Winthrop Jr.'s library included a copy of *A Short Method of Physick*, believed to be from the practice of a C.B. Gent, London, 1651, and containing copious garden-grown cures for "Fourty-five Severall Diseases."[16]

Of course plants were introduced for other reasons as well, in particular, as foods and flavors. The diet of early New Englanders was sharply defined by the seasons. Fresh foods served as summer fare, and grains, stews, and salted meats dominated the colonial diet during winter. While European and American vegetables and grains comprised the majority of cultivated crops, a surprising number of European herbs were introduced during settlement with the expressed purpose of supplementing or enhancing the New England diet. Certainly among these were herbs that commonly grace the plates of dining rooms today; Winthrop's "Bill of Garden Seeds" included "Bassill," "dill," "fennel," "marjoram," "parsley," and "Rosemary," to name a few, but many were perennial herbs whose uses in cooking have long been abandoned or only recently made their way back to the chef's table.[17] Often these perennial greens, whose hardy leaves were the first to break the spring soil's surface, were those used to end the fasts of the colonists after "starving time"[18] or "six weeks want"[19] that characterized the late winter/early spring as the colonists' stores ran low before the first crops were planted and harvested. Tender young shoots and leaves served as "sallets" with oil, vinegar, and other seasonings.[20] From late summer into the winter, the roots and greens of "Pot herbs" provided seasonings and "green sauce" for salted meats and stews, or they were preserved as "winter sallets" pickled in white-wine vinegar and sugar, as is often done with vegetables today. [21]

From a contemporary vantage point, the distinction between the medicinal and culinary herbs is rather unclear, and many of plants introduced to New England were valued as much for their medicinal properties as for their uses in cooking. Indeed, the epithets "officinale" and "officinacrum" in the scientific names of many still common culinary herbs refer to their former uses in medicine. Sage *(Salvia officinalis)*, for instance, was believed by Gerard to "quickeneth the senses and memory, strengtheneth the sinews . . . cleanseth the bloud," as well as by Parkinson to make good "gargles" and "bathings." Likewise, Rosemary *(Rosemarinus officinalis)* was prescribed by Gerard as a treatment for "jaundice, for provoking urine, and for opening stoppings of the liver" among other cures. The same was true of plants now considered wild. Purslane (*Portulaca oleracea*), Sorrel *(Rumex acetosa, Rumex acetocella)*, tansy *(Tanacetum vulgare)*, and several species of Dock, including Bloodwort *(Rumex sanguineus)* and Patience *(Rumex patientia)* provide merely a few examples. All of these were present among the list of seeds John Winthrop Jr. took care to remember in his order. Purslane, typically sown "in the alleyes of the Garden between the beds," was a common in-

gredient in early New England cookery. Used as a leafy substitute for spinach, cinnamon-flavored tarts, or eaten raw in sallets, sometimes with cucumbers and edible flowers, it was also ingested to "provoketh appetite . . . taketh away the paine of the teeth and fasteneth them . . . and allaieth the outrageous lust of the body."[22] It also made an effective poultice for treating inflammations and reducing "the navels of children that are too prominent.[23] At the same time, tansy, a known cure for worms, was yearly enjoyed as a Lenten food in the form of puddings and cakes following the knowledge that eating much fish, as one did during the season, would lead to intestinal worms. The plant was also applied as an insecticide or a poultice, and it was brewed into teas and used as an abortifacient.[24] Sorrel *(Rumex acetosa, Rumex acetosella)* and other *Rumex spp.* were used for all manner of afflictions, particularly those of the blood, skin, and bowels. They were also "much used in sauces," particularly those for meat for which it was believed to procure an appetite. It was also known for "quickening up a dull stomacke that is over-loaden with every daies penty of dishes," and used in salads and tarts.[25] In fact, Martha Washington recorded a recipe for fricandeau of beef which she specified to be served with spinach or sorrel.[26]

Judith Sumner has argued that plant phytochemicals, responsible for the pungent flavors and aromas of herbs, also had antibiotic and antifungal properties, which explains this overlap between medicinal herbs and condiments. When prepared with foods, especially meats, herbs with high amounts of these compounds killed or inhibited bacteria and fungi that otherwise caused their decomposition. More than merely masking the flavor of spoiled meats, such herbs actually interfered with the bacteria and fungi and thus the noxious odors and flavors they produced. Experienced frontier cooks used a heavy hand in applying diverse herbs and spices, as those who did suffered fewer cases of illness from food-borne pathogens like *E. coli* and *Salmonella*. In *The Art of Cookery*, Glasse provided a recipe for "beef alamode," calling for several different seasonings, including cloves, mace, allspice, parsley, black pepper, cayenne, onion, and garlic—a potent antimicrobial potpourri. As Sumner pointed out, a mixture of antimicrobial compounds might kill or inhibit bacteria where a single herb or spice failed.[27] In an age lacking any means of refrigeration, glazing a ham with cloves and honey or rubbing a turkey with sage may have made the difference in keeping the meal wholesome.

But of the plant species introduced during settlement, not all were for direct consumption. In order to assure access to that ever-important

source of food—meat—the settlers had equal interest in providing suitable forage and feed for their livestock. Coastal environments offered little in the way of nutritious forage. One Massachusetts colonist complained that his cattle "grew lousy with feeding upon it, and are much out of heart and likeing."[28] By the 1640s, a regular market of grass seed had been established in parts of New England.[29] In 1647, Roger Williams was trading grass seed with John Winthrop Jr., and in 1650, William Pynchon was moving tens of bushels of grass seed inland to Springfield. Just a few years later, records indicate a full hundred pounds of seed in chaff was for sale in Connecticut.[30]

In spite of the clear advantage the cultivation of European grasses and clovers afforded early New Englanders, the degree to which they deliberately imported seeds with cultivation in mind is unclear. It may have been that forage, feed, and enumerable other weedy plant species were introduced accidently, transported as contaminants, ballast, debris, or in the feed or refuse of imported livestock.[31] An early inhabitant of New Jersey, for instance, commented that clover grasses were spread about the fields "by the pasturage and dunging of the cattle," and in the period before 1850, seed cleaning was often ineffective. Seed merchants, moreover, were regularly found guilty of adulterating crop seed with those of no commercial value. These activities perhaps explain the introduction of pesky agricultural weeds in New England. Botanists during the nineteenth century mentioned that many grasses and weeds had been brought over with grass seeds from Europe.[32]

However, distinguishing whether a species was, or was not introduced deliberately is difficult, in part because early New Englanders had uses for native as well as introduced plants. Shepherd's purse *(Capsella bursa-pastoris)* provides an example. Despite there being no record of the plant's direct introduction, it was nevertheless said to "stayeth bleeding in any part of the body" and be "marvelous good for inflammations new begun." Culpeper wrote that "it helps all fluxes of the blood. Bound to the wrists or the soles of the feet, it helps jaundice. The juice dropped into the ears heals them. The ointment made of it is good especially for wounds in the head." Cotton Mather recommended putting it in the ear to treat a toothache.[33] The plant was also highly valued as a culinary herb and used in important celebratory meals and when entertaining guests. At the turn of the nineteenth century, Maine midwife Martha Ballard recorded in her diary having prepared it with pork for her neighbors in celebration of her husband's eighty-first birthday.[34] In spite of these uses in New England, shepherd's purse is not listed in Meager, Jos-

Hollyhock as illustrated in the 1636 edition of John Gerard's *The herball, or, Generall historie of plantes*. Though this plant – along with roses and gillyflowers – is seen as ornamental today, it was used for both medicinal and culinary purposes in colonial New England.

selyn, or M'Mahon among aromatic, pot, or sweet herbs, or plants cultivated for medicinal purposes.[35]

A simple explanation for this seems to be that New England Puritans found a use for virtually any introduced plant. It simply was not in the character of the Puritans to make waste. A prolific plant without a purpose would not have been tolerated. Scholars have suggested that colonists began importing ornamental species as early as the late-seventeenth century, but such claims are unfounded. Hollyhocks (*Althaea rosea*), gillyflowers (*Dianthus caryophyllus*), and roses (*Rosa sp*.), species commonly mistaken as essentially ornamental, possessed multiple practical uses.[36] Gerard, Parkinson, and Culpeper considered hollyhocks, for instance, to share its qualities with the "Garden Mallow" (*Malva crispa* or *Malva moschata*) and "Marsh Mallow" (*Althaea officinalis*), plants that were said to have a "viscous or slimy quality which, used inwardly, helps makes the body 'soluble' and, used outwardly, will 'mollifie hard tumours.'" In fact, as Leighton pointed out, the plant's botanical name, *Althaea rosea*, was derived from the Greek word for cure.[37] Gerard wrote

that the "conserve made of the floures of the Clove Gillifloure and sugar is exceedingly cordial and wonderfully above measure doth comfort the heart," and could combat "infection of the plague." Josselyn wrote of treating a neighbor "in Haytime, having overheat himself," with a decoction of avens in water and wine sweetened with a "Syrup of Clove Gillyflowers."[38] Even the rose was valued for its "vertues;" the plant was used to treat "choleric humours" and strengthen the heart. Also praised for its cooling qualities, roses were used in decoctions, ointments, syrups, water, honey, sauces, cakes, and much more.[39] The role of roses and gillyflowers as flavors in food, and more importantly, in medicine cannot be overlooked. As fragrant flowers, they were strong enough to mask or make palatable strong, bitter, and otherwise foul-tasting medicines.[40] Roses, moreover, provided another requisite: hedging fields.[41] Indeed, more than one account from seventeenth-century New England attest that a planting of rose and juniper bushes in a ratio of two or three to one would quickly grow into a "hedge so high as a man" and said to be impenetrable.[42]

The story of these plants did not end in the gardens and fields of colonial New England. A number of imported species spread beyond the boundaries of colonial settlements to become the first of the region's naturalized flora, and later to join the ranks of common weeds. This transformation was apparent to Native Americans as well as to the colonists. Indians dubbed *Plantago major* "Englishman's foot," for its habit of sprouting along footpaths and roadways and wherever Europeans had settled.[43]

Even in the colonial period the spreading of these plants became problematic. In 1652, New Haven settlers were already concerned with the "spreading of sorrill *(Rumex spp.)* in the corne fields." Their efforts to control its expansion were to no avail, and by the mid-nineteenth century, the invasion was so complete the weed was common throughout New England.[44]

The process began quite early. In some instances, plants colonized the New World faster than the Europeans themselves. Even where settlements were not successful, garden plants often were. In 1620, on a voyage to New England, Bartholomew Gosnold sowed and abandoned a garden on the Elizabeth Islands of Massachusetts. Upon returning, he found his Island crops ready for the reaping. In 1675, a man visited the site of a long-abandoned settlement in Maine. There, on the Permaquid River, he wrote, "Alderman Alsworth of Bristole settled a co., of people in 1625." A half-century later, he found "the Rootes and Garden Herbes,"

and the old walls that "showed it to be the place where they had been."[45] By 1634, William Wood observed that "all manner of Herbes for meate and medicine" grew well "not only in planted gardens, but in the Woods, without eyther the art or the help of man, as sweet Marjoram, Purselane, Sorrel, Peneriall, Yarrow, Mirtle, Saxifarilla, Bayes." Purslane and sorrel, along with tansy and other species of dock, came to be among those most regularly noted for their dispersal patterns. Upon completion of *New Englands Rarities*, Josselyn had found purslane, "Wild sorrel" *(Rumex acetosella)*, and three species of dock *(Rumex crispus, Rumex patientia, Rumex sanguineus)* growing at will in the region, though he remarked that the bloodwort *(R. sanguineus)* grew but "sorrily."[46] In 1770 Kalm wrote of tansy escaping cultivation, growing "here and there in the hedge, on the roads, and near houses."[47] Of the species' ranges during the colonial period, little is known, but pollen and seed analysis from the site of the Sheburne family gardens at Strawbery Banke indicate purslane, sorrel, and dock were growing there by the end of the first quarter of the eighteenth century.[48] Martha Ballard of Hollowell used tansy, sorrel, patience, and dock between 1787 and 1812 during the years she kept her diary.[49] By 1869, puslane, tansy, sorrel *(R. acetocella)*, and dock *(R. crispus, R. sanguineus)* were considered prevalent enough throughout Maine to be included in Lamson-Scribner's *Weeds of Maine: Popular Description and Practical Observations in regard to the habits, Properties, and best methods of Extermination, or nearly all the Weeds found in the State.*[50] By the end of the century, one species of sorrel, *Rumex acetosella* was located widely across the state, and tansy and *Rumex crispus* had extended their ranges at least as far west as Skowhegan and as far north as Aroostook county. By 1944, purslane was found in this territory as well.[51] Today, each of these seven species is found throughout New England, and in the case of some species, across the continent.[52]

Although these few varieties of flora represent a small sample of the herb dispersal across time and space, their history, and ours, point to two major questions: how did they become naturalized, and why are these plants, once considered so useful, now deemed to be weeds? To put these questions into few words, what makes a weed?

In light of the current concerns surrounding the ecological impact of invasive plant species, scientists look to the past to shed light on these issues. Frequently studies focus on the factors that determine a plant's relative success in adapting and establishing themselves in a new range. Richard Mack points out that when plant species are introduced to a new range deliberately by humans, the species are much more likely to be-

Sorrel *(Rumex acetosella)* as illustrated in the 1636 edition of John Gerard's *The herball, or, Generall historie of plantes.* A species once planted for medicinal and culinary uses, now one of the most prevalent naturalized species in New England.

come naturalized. In the New England colonies, naturalization was determined by the colonists' practice of "transplanted agriculture." Even if species arrived accidentally, they were likely to accompany the seed of another chosen species.[53] A 2002 study concluded that introducing new species in and of itself did not explain the dramatic changes in species composition that occurred in New England: "The invasion of a new species will have no effect on the trajectory [of a plant community] if it is simply added to the community, or if it directly replaces one species. Alternatively, a new species will change the path of the trajectory if it alters primary productivity, species interactions, disturbance regimes or water or nutrient cycles."[54]. But if species introductions alone could not explain current species distribution, what could? Mack and Erneberg argue that the intention behind the introduction of the species, and especially the aim of cultivating that species, was the most significant human factor to affect species naturalization. As they explain:

> Cultivation is the deliberate protection of plant populations from environmental hazards, including those with stochastic expression. Such

> protection can allow the population to reach a numerical threshold, such that it can sustain losses arising from subsequent stochastic events. At that threshold size the population may become naturalized, even if cultivation is withdrawn. Thus, cultivation emerges a potential counter-force to environmental stochasticity and may well facilitate naturalization.

For some species, they admit, there is no such link; one immigrant species could arrive in a new environment and become naturalized without the aid of human cultivation, while another, regardless of the degree of cultivation, might never manage to hop the proverbial garden fence. In these cases, species' biological characteristics or environmental circumstances provide the determining factors. However, of the vast majority of species we know to have been introduced during settlement, the theory proposed by Mack and Erneberg holds true.

As history has shown, the Puritans eagerly put their plants to work, forage and feed species in the fields and household herbs in the backyard kitchen gardens. While tenacious grasses and clovers hastily took up residence on newly cleared land freshly dunged by pasturing cattle, the herbs of the kitchen garden were more diverse in their needs. The kitchen garden itself provided an ideal environment in which the immigrant species could convalesce before establishing a footing in the New World. Kitchen gardens were planted in raised, rectangular beds, edged with boards, bones, tiles, or stone, and piled high with "good earth" to ensure soils were well-drained. When possible, gardens were planted on lands slightly pitched. Graded gravel walkways further promoted good drainage and deterred plant pathogens.[55] In the early years of settlement, good soils and natural fertility were in abundance. Francis Higginson and William Wood reported enthusiastically on the "size and sweetness" of New England crops.[56] The colonists made use of all manner of household, human, and animal wastes to enrich their soils.[57] Fish, seaweed, and peat were harvested from oceans, rivers, and swamps, and along with compost teas of sheep or other dung, they were seeped in water and allowed "to stand in the sun until it be in better case to use."[58] Good fencing and an outer hedge of roses or whitethorn deterred rodents, swine, chickens, and dogs. Colonists guarded against weed incursion and crop damage by planting border crops, weeding, and winter mulching.[59] Less hardy perennials were given extra coverings of straw to protect them from cold winter temperatures. Leonard Meager urged readers to "care to cut or top your herbs often, for it is not only handsome but causeth your herbs to last longer."

If frost do continue, take this for a law
The strawberries look to be covered with straw . . .

The gilliflowers also, the skillful do know
Both look to be covered, in frost and in snow.[60]

This encouragement and protection may have allowed threshold size populations to emerge and take hold beyond the garden and field, but the other factor was the lasting effects of agricultural expansion in New England and the changes it brought to the landscape. These changes allowed transplants to pass into the broader environment.[61] According to Richard Mack, alien floras often exhibit a set of "weedy" traits, including continuous seed production, high overall seed output, ability to grow and mature rapidly, and capacity for germination under a wide range of environmental conditions.[62] Many evolved in agricultural and pastoral soils that were poor in nutrients, frequently disturbed, compacted, and heavy grazed.[63] Thus they were bred to compete vigorously, and thus in North America they were able to move quickly from gardens and fields to disturbed lands on the margins of the farm country. This perhaps explains why *Tanacetum vulagre, Rumex crispus, Rumex acetosella,* and *Portulaca oleracea* quickly became common along footpaths, roadways, and other disturbed areas.

Nevertheless, there are instances in which an immigrant plant population that possess attributes allowing it to tolerate a new environment might still be destroyed by chance events. This could explain the disappearance of bloodwort *(R. sanguineus)* from New England sometime in the late-nineteenth century, although our limited understanding of the plant's range during that time makes any conclusion problematic.

And finally, why did plants once considered indispensable to New England colonist become "weeds"? By 1869, at the time when Lamson-Scribner released his book, all of the species once prized for their usefulness had become worse than worthless—they were weeds. He referred to *R. acetosella* as "a despicable little foreigner" and tansy *(T. vulagre)* was "too well known too need describing." Although he mentioned the culinary and medicinal uses of a few species, he made sure to do so in reference to the distant past, explaining, for instance, that the epithet of purslane's scientific name was derived from olus, a Latin word for pot herb.[64]

One possible explanation for the shift from herb to weed derives from advances in medicine. In the nineteenth century, medical profes-

sionals began to rely less and less on plant-based remedies. As populations expanded, it became necessary to identify more accessible sources of medicine. Chemists learned to isolate and manufacture the properties once derived from wild and garden herbs.[65] Increasingly, families sought medicines from druggists or physicians rather than from local herbalists, midwives, or backyard gardens. Traditional uses were, with time, forgotten, and the inclusion of potentially addictive ingredients such as alcohol, opium, and cocaine popularized pharmaceuticals. The passage of the 1906 Pure Food and Drug Act further removed risky folk remedies from popular consciousness.[66]

Changes in diet and agricultural practice may have played a role as well. Colonial diets were sharply tuned to the seasons, and in spring settlers were starkly dependent on early perennial greens to supplement dwindling winter supplies.[67] By the 1770s, substantial advances had been made in the methods of preserving and storing foods, particularly vegetables. Early-Victorian cookbooks show that vegetables began to figure more prominently in the year round diet, and with this, the cultivation of culinary perennial herbs began to wane.[68] Developments in farming, especially the use of chemical fertilizers, made it feasible for New Englanders to substitute annual varieties like spinach and arugula for the bitter, and by then wild greens.[69] While forage they might have done, it seems unlikely they depended on these wild resources, at least on a wide scale. While later-day diarists often noted the spring arrival of berries, rhubarb, peas, and herbs, they never made mention of picking and cooking the first wild edibles of the season. As Sarah McMahon notes, the "English traditionally were not enthusiastic foragers," and they likely passed on their taste for garden over wild plants to their American descendants,.[70] Ultimately, the decline in the use of these species was the result of many factors, including shifts in medical practice, agriculture, food preservation, and dietary preferences, and over time, the value of these once important species was lost to popular consciousness.

Humans provide an easy scapegoat for the changes in the New England environment over the last few centuries. Over this long history we tend to perceive nature in simple terms, as passive and inert—a victim, perhaps, transformed and impoverished by human intervention. But our tendency to view ourselves as something other than or apart from nature obscures the truth. Viewing history entirely in human terms, we deny other species the agency to affect change in the environment. The history of New England's naturalized flora challenges this perception. While the story of these species is as yet incomplete—we may regret that

plants are not as judicious about leaving records as the human species—the few glimpses we catch of their past shows that environmental change, at least in the case of New England species composition, is a result of a dynamic interaction between nature and culture. This understanding, if embraced, might enrich our perception of human-environmental interactions and contribute to future efforts for protecting and preserving the species we now consider valuable, whether natives or newcomers.

NOTES

1. William Cronon, *Changes in the Land*, (New York: Hill and Wang, Farrar, Straus & Grioux, 1983), 143.

2. Cronon, *Changes in the Land*, 19-25.

3. Howard S. Russell, *A Long Deep Furrow*, (Hanover, NH: University Press of New England, 1976), 8.

4. Cronon, *Changes in the Land*, 37.

5. Cronon, *Changes in the Land*, 36-37.

6. Russell, *A Long Deep Furrow*, 18.

7. Ann Leighton, *Early American Gardens "For Meate of Medicine",* (Boston: Houghton Mifflin Company, 1970), 57.

8. Judith Sumner, *American Household Botany, A History of Useful Plants 1620-1900*, (Portland, OG, Cambridge, U.K: Timber Press, 2004), 229.

9. Mary-Alice F. Rea, "Early Introduction of Economic Plants into New England," *Economic Botany*, 29, no. 4 (1975): 333-356, http://www.jstor.org/stable/4253626 (accessed March 15, 2012), 336.

10. Leighton, *Early American Gardens,* 189-190.

11. Rea, "Early Introduction of Economic Plants," 338.

12. Leighton, *American Gardens of the Nineteenth Century,* 16.

13. Leighton, *Early American Gardens,* 112-114.

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