

Food, Fuel, and the New England Environment in the War for Independence, 1775-1776

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On 7 October 1775, sixteen ships in the Royal Navy entered the harbor of Bristol, Rhode Island. A lieutenant from the flagship *Rose* came ashore and addressed the crowd gathered on the wharf. One man recalled the lieutenant saying that “Captain [James] Wallace . . . desired that two or three of the principal men or Magistrates of the Town would go on board his ship, within an hour, and hear his proposals, otherwise hostilities would be commenced against the Town.” William Bradford, one of the magistrates, replied that “in his opinion, Captain Wallace was under a greater obligation to come ashore and make his demands known to the Town, than for the Magistrates to go on board his ship to hear them.” The lieutenant returned to the *Rose* and Wallace’s answer arrived an hour later--in the form of cannon balls as the fleet opened fire on the town. The town leaders quickly agreed to meet Wallace, who then demanded from the town two hundred sheep and thirty “fat cattle.” Impossible, replied the men, “for the country people had come in and drove off their stock, saving a few sheep and some milch cows.” The two sides argued back and forth and eventually Wallace made a final proposal: “If you will promise to supply me with forty sheep, at or before twelve o’clock, I will assure you that another gun shall not be discharged.” The men faced a difficult decision; if they refused to supply their despised enemy the town would go up in flames, consuming not just their homes and goods but also the one hundred sick residents who could not be moved safely. Reluctantly, they agreed to these terms and Wallace’s men soon loaded the sheep on board. As the fleet sailed off the next day,

the citizens of Bristol counted their losses. The Rev. John Burt fled from the bombardment and collapsed, probably of a heart attack, in a nearby field. A child also died, possibly due to exposure in the rain during a similar evacuation, but the inhabitants gave “admiration and gratitude to God . . . that no more lives were lost, or persons hurt by such an incessant and hot fire, the streets being full of men, women, and children, the whole time.”¹

Captain Wallace’s search for food characterized much of the activity in New England during the first year of the War for Independence. The first casualties came when the war began at Lexington and Concord on 19 April 1775, and hostilities turned even bloodier at Bunker Hill two months later. But until British forces evacuated Boston in March 1776, those battles proved to be the exception rather than the norm during this first year of open warfare. Notwithstanding a two-pronged invasion of Canada launched from upstate New York and from Maine, the vast majority of American and British forces spent their time in New England finding and acquiring supplies for themselves, and denying their enemy those same items. For months the Royal Navy had cruised the Atlantic coast, seizing livestock, hay, and timber for the main British forces in Boston. On countless occasions the inhabitants, like those in Bristol, resisted by driving their animals inland and by dispatching privateers and militia to attack the raiding parties. Wallace demonstrated that such actions could be costly, but for both sides the stakes were even greater.

The military’s dependence on food may be obvious but its reliance on animals and wood, which played vital roles in warfare at this time, should not be overlooked. Firearms, forts, naval ships, gunpowder, and wagons all required wood, not to mention the soldiers who needed barracks for shelter and fuel to cook their food.² Inadequate supplies of wood, according to the

¹ “From a Gentleman at Bristol, Rhode Island, to His Friend in New York, 12 October 1775,” in Peter Force, ed., *American Archives* (hereafter cited as *AA*) (Washington, D.C., 1837-53), ser. 4, vol. 3:990.

² J.R. McNeill, “Woods and Warfare in World History,” *Environmental History*, 9 (July 2004): 388-410.

Massachusetts House of Representatives, “not only tends to the Discouragement of the Soldiers from again inlisting into the Service of the United Colonies, but also may be attended with a Dispersion of the Army, the Loss of our Lives, Devastation of the Towns in this Neighbourhood, and Ruin of the Inhabitants.” The British tried to obtain supplies from Canada but, as Admiral Samuel Graves noted, “The Rebels have armed Vessels on the Coast, who at present confine their Operations to stopping Supplies coming to us from the Bay of Fundy. . . . I believe by this time not a Ship on the Coast can get supplies, or refreshments of any Kind, but what are taken by force or Stratagem.” He concluded that “Our situation the approaching winter will be truly critical as the Ships will be exposed to the Insults, and, if frozen up, to the Attacks of the most ungenerous and implacable Enemy.”³

Historians of the revolutionary period have noted the importance of food and fuel, but tend to give greater weight to other issues or to pay relatively little attention to the first year of the war. Don Higginbotham’s and Robert Middlekauff’s sweeping histories of the Revolution emphasize important topics during the first year such as Bunker Hill, the British and the American armies, and the invasion of Canada, all of which overshadow their brief references to supplies. David McCullough’s more circumscribed study of the year 1776 pays more attention to the material conditions of both armies, but passes over the larger contexts from which those supplies emerge. Richard Buel, Jr., and E. Wayne Carp provide such contexts--the complicated American agricultural system and the problems arising from terrain, weather, self-interested

³ *Journals of the House of Representatives of Massachusetts, 1775-1776* (Boston: Massachusetts Historical Society, 1983) (hereafter cited as *JHRM, 1775-1776*), vol. 51, pt. 2:11. Samuel Graves to Admiral Duff, 4 Sept. 1775, in Samuel Graves, “The Conduct of Vice-Admiral Samuel Graves in North America in 1774, 1775, and January, 1776,” a transcript of which is contained in Ms. N-2012 (Tall), Massachusetts Historical Society (hereafter cited as MHS) 3:492. I will provide accurate quotations and therefore avoid using the patronizing *sic*. For a thorough examination of both military forces during this time period, see Allen French, *The First Year of the American Revolution* (Boston: Houghton Mifflin, 1934).

individuals, negligence, and devalued currency--but they focus on larger issues (the American economy and its political culture, respectively) and spend little time on the war's first year. Erna Risch and R. Arthur Bowler look at the American and British experiences relating to logistics, which Bowler defines as "the planning and implementation of the production, procurement, storage, transportation, distribution and movement of personnel, supplies and equipment." Their works provide essential background for understanding the situation that both the Americans and the British faced, but none of the studies discussed here address the environmental context for this food and fuel.⁴ To what degree could New England's agricultural lands provide the grain to make bread, and the hay to feed livestock over the winter? Could New England's forests supply the timber and firewood necessary to sustain the Continental Army? How did eighteenth-century warfare affect the ways humans used the environment for these ends?

Recently, environmental historians such as Richard P. Tucker, Edmund Russell, and Lisa M. Brady have turned their attention to matters of warfare but the most recent scholarship, especially on the United States, has tended to concentrate on the past 150 years. Elizabeth A. Fenn has written the most important work for the revolutionary period, but she focuses solely on smallpox. Ted Steinberg's survey of American environmental history briefly touches on the Revolution, explaining how population growth and declining harvests "certainly provided a context that made Parliament's attempt to subordinate the colonies all the more intolerable," but he does not examine the issue in depth nor analyze the war itself. William Cronon, Carolyn

⁴ Don Higginbotham, *The War of American Independence: Military Attitudes, Policies, and Practice, 1763-1789* (New York: Macmillan, 1971), 67, 99; Robert Middlekauff, *The Glorious Cause: The American Revolution, 1763-1789*, rev. ed. (New York: Oxford University Press, 2005), 308; David McCullough, *1776* (New York: Simon & Schuster, 2005), 8, 24, 30, 39, 60, 67, 72-74; Richard Buel, Jr., *In Irons: Britain's Naval Supremacy and the American Revolutionary Economy* (New Haven: Yale University Press, 1998), 1-20, 30-37; E. Wayne Carp, *To Starve the Army at Pleasure: Continental Army Administration and American Political Culture, 1775-1783* (Chapel Hill: University of North Carolina Press, 1984); Erna Risch, *Supplying Washington's Army* (Washington, D.C.: Center of Military History, U.S. Army, 1981); R. Arthur Bowler, *Logistics and the Failure of the British Army in America, 1775-1783* (Princeton: Princeton University Press, 1975), vii.

Merchant, Virginia DeJohn Anderson, and Brian Donahue have written path-breaking books about New England's flora, fauna, and human history, but chronologically they do not reach (or they skip over) the American Revolution.⁵

Such a perspective of the war, especially during its first year, allows us to address key issues relating to the American Revolution and the New England environment. The struggle for food and fuel—with its constant raids, small-scale fighting, and seizures of ships—escalated tensions and frustrations to the point where the British began to wage a more destructive form of warfare. This hardened the sentiments of many Americans and stiffened their resolve to separate from Great Britain, providing an important step on the road towards independence. The war's demands for food and fuel taxed an environment that, in several respects, could barely sustain the civilian population. Many towns surrounding Boston had difficulty providing the firewood and hay General George Washington requested for his army, and such difficulties were rooted not in loyalist sympathies or insufficient numbers of wagons, but in environmental scarcity. Furthermore, the conflict with Britain forced Washington and the Continental Congress to change the way some Americans interacted with the environment, by banning the consumption of certain foods and by forcing animals to be removed from particular ecosystems. Given that open warfare centered on New England for only eleven months, these actions did not have a

⁵ Richard P. Tucker and Edmund Russell, eds., *Natural Enemy, Natural Ally: Toward an Environmental History of Warfare* (Corvallis: Oregon State University Press, 2004); Edmund Russell, *War and Nature: Fighting Humans and Insects with Chemicals from World War I to Silent Spring* (New York: Cambridge University Press, 2001); Lisa M. Brady, "The Wilderness of War: Nature and Strategy in the American Civil War," *Environmental History*, 10 (July 2005): 421-447. Elizabeth A. Fenn, *Pox Americana: The Great Smallpox Epidemic of 1775-82* (New York: Hill and Wang, 2001) covers the topic so thoroughly that I have omitted from this essay discussion of the disease, even though it played a critical role in Boston during the first year of the war. Ted Steinberg, *Down to Earth: Nature's Role in American History* (New York: Oxford University Press, 2002), 45. William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983); Carolyn Merchant, *Ecological Revolutions: Nature, Gender, and Science in New England* (Chapel Hill: University of North Carolina Press, 1989); Virginia DeJohn Anderson, *Creatures of Empire: How Domestic Animals Transformed Early America* (New York: Oxford University Press, 2004); and Brian Donahue, *The Great Meadow: Farmers and the Land in Colonial Concord* (New Haven: Yale University Press, 2004).

lasting effect on the environment. However, the American Revolution helped shape a particular way that humans interacted with their environment, establishing a relationship that would characterize the United States long after 1776.

The Blockade of Boston⁶

After the battles of Lexington and Concord, New England militiamen bottled up the British forces in Boston proper. The town occupied what was then a peninsula that stretched out into the bay, connected to the mainland only by a narrow “neck” of land. [see Map 1] The blockade began quickly, for “in the course of two days,” wrote Ensign Henry D’Bernicre, “from a plentiful town, we were reduced to the disagreeable necessity of living on salt provisions, and fairly blocked up in Boston.” The Americans erected formidable defenses, as Lieutenant John Barker of the British Army noted on April 24. “They are now in such a good state of defence that it wou’d be no easy matter to force them. There is an Abbattis in front of the last Bastion,

⁶ The situation from 19 April 1775 to 17 March 1776 is typically referred to as the “siege” of Boston, dating at least from the publication of Richard Frothingham, *History of the Siege of Boston, and of the Battles of Lexington, Concord, and Bunker Hill* (Boston: C.C. Little & J. Brown, 1849) and continuing to the present day. However, a keyword search of the Library of Congress’s digital collections *George Washington Papers at the Library of Congress, 1741-1799* [online] (hereafter cited as GWP), available at <http://memory.loc.gov/ammem/gwhtml/gwhome.html> and *A Century of Lawmaking for a New Nation: U.S. Congressional Documents and Debates, 1774-1875* [online], available at <http://memory.loc.gov/ammem/amlaw/lawhome.html> reveals that neither George Washington nor the members of the Continental Congress used the term “siege” in this context. John Shy recommends substituting the term “blockade” because a “blockade is necessarily passive and tests endurance of both sides (keeping themselves fed, warm, and healthy), while a siege is an active form of warfare, with fortifications pushed ever closer to the besieged place, and defenders sallying forth to disrupt this process. When Washington . . . turned the blockade into a true siege, with big guns fortified on Dorchester Heights, the British cleared out of Boston;” personal correspondence, 18 Jan. 2006. Indeed, on 10 Sept. 1775, Washington describes how the British forces are “suffering all the Inconveniencies of a Siege,” but does not call it a siege. And when Congress thanked Washington and the troops for “their wise and spirited conduct in the siege and acquisition of Boston,” it was referring to the final, active phase of the army’s efforts. See George Washington to John A. Washington, 10 Sept. 1775, GWP, available [http://memory.loc.gov/cgi-bin/query/r?ammem/mgw:@field\(DOCID+@lit\(gw030359\)\)](http://memory.loc.gov/cgi-bin/query/r?ammem/mgw:@field(DOCID+@lit(gw030359))), and 25 March 1776, *Journals of the Continental Congress, 1774-1789*, ed. Worthington C. Ford et al. (Washington, D.C., 1904-37), 4:234 (hereafter cited as JCC).

and across the road is a treple row of chevaux de frise.” Thus began the blockade of Boston, a course of action this disorganized American force neither prepared for nor anticipated.⁷

The chaos of these early months makes it difficult to determine an accurate number of the forces around and within Boston. In the immediate aftermath of Lexington and Concord, perhaps 20,000 militiamen flooded into Cambridge and the surrounding towns. Over the next two months the Massachusetts Provincial Congress created an army of about 8000, enlisting men through the end of the year. The Provincial Congress soon realized that a larger force would be necessary and called for a New England army of 30,000 men, of which 13,600 would come from Massachusetts. In June the Continental Congress formed the Continental Army, which had 10,000-12,000 men; this grew to about 17,000 men in mid-July and over 22,000 by mid-October.⁸ The Americans had enough food at the start of the blockade because each man brought a week’s worth of rations, but by the end of April other measures were necessary. The Massachusetts Committee of Supplies issued a public notice, “that there will be wanted for the Use of the Massachusetts Army, a large Quantity of the Articles following, viz. Shoes, Hose, coarse Cloths, Check, Cotton and Linen and Tow Cloth, Beef, Veal, Pork, Rice, Butter, Flour, Beans, Peas, Vinegar, Salt Fish, Molasses, Wood, and all Kinds of Grain.”⁹

The British Army, which numbered about 3700 men in April and about 6000 by the end of the summer, also had problems obtaining provisions. Cut off from the mainland and therefore

⁷ Henry D’Berniere, “Narrative, &c.,” *Collections of the Massachusetts Historical Society* (Boston: MHS, 1816), ser. 2, vol. 4: 218 (other sources spell his name “De Berniere”); John Barker, *The British in Boston, Being the Diary of Lieutenant John Barker of the King’s Own Regiment from November 15, 1774 to May 31, 1776* (Cambridge: Harvard University Press, 1924), 38; French, *The First Year*, 26.

⁸ Robert K. Wright, Jr., *The Continental Army* (Washington D.C.: Center for Military History, United States Army, 1983), 12-23; French, *The First Year*, 58-67.

⁹ French, *The First Year*, 27; Massachusetts Committee of Supplies, “In Committee of Supplies, Watertown, May 8th, 1775” in *Early American Imprints, Series 1: Evans, 1639-1800* (New York: Readex

largely unable to acquire food and fuel for itself, the British attempted to get colonists to bring them supplies, but this met with resistance. Admiral Graves, commander of the Royal Navy in North American waters, believed that “the bulk of the People [are] through wicked Misrepresentations sufficiently disposed to distress the Kings forces: And this disposition among the Country people rendered our dependance for Fuel and fresh provisions very precarious.” When provisions became available, Graves often lacked the ships to get them because “the Fears of a few well disposed people to risk their Vessels, and the determination of the rest to prevent the Army and Navy having Supplies of provisions and Fuel, have caused most of the Vessels in this province to be dismantled and laid up.”¹⁰

The Royal Navy quickly became the most important means by which British forces received provisions. Besides escorting transports arriving from England, Nova Scotia, and the West Indies, the Navy also focused on capturing American ships laden with provisions. “The Army is in great Want of Beef and Pork,” wrote Graves to Captain Wallace, “which I am informed there is a probability of obtaining . . . as great Quantities of Pork are usually shipped at this Season from Connecticut to the West Indies and the Eastern parts of this Province and that of New Hampshire.” Flour, cattle, and other captured provisions arrived throughout the spring and summer, but the Navy faced considerable difficulties. Americans preyed upon not only those British transports, but also upon the ships that captured American supplies. Admiral Graves reported that “the Rebels have seized and carried off into their Ports several Vessels laden with Fuel, Lumber and Provisions coming to Boston, and . . . have retaken two Vessels

Microprint, 1985) (hereafter cited as Evans fiche), no. 14196. The region had faced difficulties getting supplies ever since the previous summer when the Boston Port Act closed Boston to shipping.

¹⁰ For the size of the British Army, see French, *The First Year*, 89, 104; journal entry for 25 May 1775, in Graves, 1:101-02; Graves to Stephens, 13 May 1775, in Graves, 1:87.

seized by the *Falcon* and made the men prisoners.”¹¹ Even at this early point in the war, the basic environmental commodities of grain, meat, and wood dominated military thinking. The strategists hoped to subdue the enemy not by conquering territory, sinking ships, or shooting soldiers, but by feeding, sheltering, and heating their own forces and denying their enemy this capability.

This approach became apparent with the skirmishing that took place on Noddle’s and Hog Islands, about one mile northeast of Boston in the harbor.¹² On the morning of May 27, several hundred Massachusetts and New Hampshire troops supported a party of 20-40 men who landed on Noddle’s Island and began to drive off cattle and horses. Admiral Graves noted that “the Rebels [were] pursuing their avowed design of cutting off possible Supply to the Army and Navy, and of destroying what they cannot carry away,” including several additional horses and cows, an old farmhouse, and a barn full of salt, hay, and lumber. In response, Graves sent over the schooner *Diana* and the sloop *Britannia* at about three o’clock; these ships, along with a contingent of forty Marines on the island, opened fire on the Americans and drove them back to Hog Island. As the Americans pulled back further to Chelsea, they took an additional three or four hundred sheep from Hog Island. With the arrival at nine o’clock of several hundred more American troops and two cannons, the combined force faced the *Diana* and “a very heavy fire ensued from both sides.” After two or three hours the schooner ran aground within sixty yards of

¹¹ Graves to Wallace, 16 June 1775 and Graves to Stephens, 19 May 1775, in Graves, 3:441-42 and 1:92. For representative examples of transports arriving, see Graves, 1:113; for captured American ships, see Barker, *The British in Boston*, 54 and Graves, 1:178.

¹² The sources consulted include Caleb Haskell diary, in *March to Quebec: Journals of the Members of Arnold’s Expedition*, Kenneth Roberts, comp. (New York: Doubleday, Doran, 1938), 460; Phineas Ingalls, “Phineas Ingalls Journal, 1775-76,” Ms. S-395, MHS; Timothy Newell, “A Journal Kept During the Time Boston was Shut Up in 1775-6,” *Collections of the Massachusetts Historical Society*, ser. 4, vol. 1 (1852), 262; “A Circumstantial Account of the Battle at Chelsea, Hog Island, Etc., in Massachusetts,” Force, AA, 2:719; Barker, *The British in Boston*, 50-52; and Graves to Stephens, 7 June 1775, in Graves, 1:104-06. Today, Noddle’s Island forms part of East Boston.

shore and the British abandoned it once the tide started to recede. At dawn the next day, the Americans removed the ship's guns and burned the vessel completely. In all, the Americans captured four cannons, about ten swivel guns, and the cattle, sheep, and horses from Noddle's and Hog Island. Their casualties amounted to four wounded, while Graves reported that two of his men were killed and "several" wounded.¹³

Daily Rations

The livestock provided the American forces much-needed provisions. During the first month of the blockade the Massachusetts Provincial Congress informed its citizens about the seriousness of the situation.

The Quantity of Bread daily expended by the Army raised by this Colony for the Preservation of the Lives, Liberties and Properties of the Inhabitants of this and the other American Colonies, is very large, and you are sensible that a Failure to supply this necessary and important Article will be attended with the most fatal Consequences. The Time which the Committee of Supplies have had to prepare, has been hitherto so short and taken up in equally important Matters, that we have not been able to make effectual Provision, and are under a Necessity of requesting your Assistance to accomplish it.

The government urged town officials "to immediately purchase or cause to be purchased for the Colony Army, all the Flour, Wheat, Rye and Indian Corn in the Hands of the Inhabitants of your Town, which is not wanted for their private Consumption, and hire Teams for transporting the same to the Magazine [in Watertown]." The problem did not seem to be a matter of insufficient supplies, for a subsequent message stated that "As the Country affords every thing in plenty

¹³ One cannot state for certain how many cattle came off of Noddle's and Hog Islands. In a court case eleven years later, Caleb Pratt testified that Noddle's Island had "a large Quantity of Horses and Catle also a Verry Grate number of Sheep, and some hoggs." Henry Howell Williams, seeking compensation for his losses that day, reported losing 83 tons of hay, 43 "elegant horses," 3 cattle, 220 sheep, 4 "fine swine," the equivalent of 85 cords of wood, and 333 "Young Locust trees Cut down." Including the "mansion house" that the Army burned, Williams valued his total loss at £3645; see "Noddle's Island," Ms. S-678, MHS. Regarding the *Diana*, each side claimed their own men burned the ship.

necessary to subsist the Army, and we cannot at present obtain many things but by your Assistance, we assure ourselves that you will act your parts as worthily as you have done and hope that the Event of all our exertions will be the Salvation of our Country.”¹⁴ Indeed, at this time the thirteen mainland British colonies annually exported enough flour and wheat to feed an army of 240,000 men, so issues such as high prices, available currency, and transportation restricted the grain supply.¹⁵ But to paraphrase Deuteronomy 8:3, soldiers do not live on bread alone. Overflowing breadbaskets were not necessarily accompanied by platters stacked high with steaks and hams.

As of early June, Massachusetts soldiers were allotted a daily ration of one pound of bread, half a pound of beef, and half a pound of pork (“and if Pork cannot be had, one Pound and a Quarter of Beef”). Once a week the soldiers were supposed to receive one and a quarter pounds of salt fish in place of the day’s meat allowance.¹⁶ A survey of the records for ten regiments reveals that while the men received their full bread ration and almost their full allowance of meat, they received only about one-third of the beef that was their due.¹⁷ [see

¹⁴ Massachusetts Provincial Congress, “Supply Chamber, Watertown, May 25th, 1775,” Evans fiche 42880; Massachusetts Committee of Supplies, “Chamber of Supplies, Watertown, June 18th, 1775,” Evans fiche 42870.

¹⁵ Richard Buel, Jr., calculated that in 1770 the mainland colonies exported 604,836 barrels of flour, which would translate into about 118,500,000 daily one-pound rations of flour, which would supply an army of about 325,000 for one year. Because armies typically consumed 25% more rations than they had men, Buel arrived at a final figure of 243,591—still more than ten times the size of the Continental Army outside Boston in 1775. See Buel, *In Irons*, 7, 271-72 (n. 8).

¹⁶ Massachusetts Provincial Congress, “In Provincial Congress, Watertown, June 10th, 1775,” Evans fiche 42876. The ration also included a pint of milk or a jill (four ounces) of rice; a quart of beer; a jill of peas or beans; six ounces of butter per week; a pound of soap for six men per week; and, if available, half a pint of vinegar per week.

¹⁷ John Pigeon, “Commissary of the Massachusetts Army,” kept a ledger of the provisions billed “to Province” from April 19 to August 2 for the twenty-six regiments involved with the siege of Boston; see John Pigeon Ledger, 1775,” Ms. N-719, MHS and Wright, *Continental Army*, 13, 19-20. The ledger in its present state contains complete accounts for only fourteen regiments; the ten that were surveyed have records that run for at least two months. The ledger’s general accuracy regarding the number of men and the rations they received can be confirmed by consulting Nathan Goold, *History of Colonel Edmund Phinney’s Thirty-First Regiment of Foot*

Table 1]. During the early part of the blockade, moreover, the Commissary could scarcely provide any beef. The Massachusetts soldiers subsisted on pork until the last week of May, after which time supplies of beef arrived regularly (and supplies of pork essentially disappeared). Such findings run counter to the conclusions of earlier historians such as Victor Leroy Johnson, who claimed, “Of the two staple products constituting the ration, flour and meat, the latter was the easier to procure. In fact, the supply of either beef or pork had been more than sufficient ever since the army had settled down to the siege of Boston.”¹⁸

By comparison, the soldiers from Connecticut fared better under Joseph Trumbull, the colony’s able Commissary General. From his headquarters in Cambridge, Trumbull supervised nine commissaries who remained in Connecticut, each located in a town with a “productive hinterland,” and who purchased and transported the required materials. One particular commissary, Col. Henry Champion of Colchester, focused his efforts on supplying beef to the troops four days a week. According to the historian Chester McArthur Destler, Trumbull “achieved a successful coordination of the supply of the Connecticut regiments at Cambridge. He provided for them much better than did either the Massachusetts Committee of Supplies or

(Portland, Maine: The Thurston Print, 1896), 11-20 and John Sullivan, “The Morning Returns of the Regiments in Camp on Winter Hill,” 27 July 1775, in “Revolutionary War Orderly Books, John Sullivan’s Brigade,” P-394, MHS, microfilm reel 4.2 [hereafter cited as Sullivan Orderly Books].

The men in the ten regiments received 389,588 rations and 86,538 pounds of pork. Given pork’s one-to-one ratio with beef in the allotted daily ration, the men should have also consumed 86,538 pounds of beef to form 86,538 complete rations of meat. For the remaining 303,050 rations the men should have received 378,813 pounds of beef (303,050 x 1.25). The soldiers actually received 136,823 pounds of beef (223,361 total pounds of beef less the 86,538 pounds that was coupled with the pork), or 36% of the official allowance. The soldiers also received 72,594 pounds of veal; if combined with the beef, the total still comes to only 69% of the beef called for in the rations.

¹⁸ The data are drawn from the records for Colonels Ephraim Doolittle, Thomas Gardner, Samuel Gerrish, James Scammons, Jonathan Ward, and Asa Witcomb, in “John Pigeon Ledger;” Victor Leroy Johnson, *The Administration of the American Commissariat During the Revolutionary War* (Philadelphia: University of Pennsylvania, 1941), 44.

the New Hampshire Commissaries for their provincial troops.”¹⁹ Recognizing Trumbull’s abilities, the Continental Congress at the end of July appointed him the Commissary General for the entire Continental Army. He quickly established a Court of Inspection through which his men destroyed any stores of “Stinking Putred Beef” and a rational system whereby suppliers drove their hogs and cattle from all parts of New England to slaughterhouses and packing stations outside of Boston.²⁰ By late 1775, therefore, the army had the meat that it had lacked during the summer.

That earlier scarcity, however, cannot be attributed solely to administrative and bureaucratic difficulties in the pre-Trumbull era. The British managed to siphon off many animals; to give just one example, a raid on Gardiner’s Island, located near Long Island, New York, yielded 30 hogs, 1000 sheep, 13 geese, and 3 calves. Upon departure, according to Benjamin Miller, “they left on the table half a guinea and a pistareen.”²¹ Other colonists in New York willingly sold their poultry and animals to British forces.²² Furthermore, animal husbandry practices may help explain the scarcity of beef earlier in the summer. Farmers in eastern Massachusetts typically kept their cattle on their farms during the winter months, but in the spring they increasingly pastured the animals in the Connecticut River counties to the west, or in

¹⁹ Chester McArthur Destler, *Connecticut: The Provisions State* (Chester, CT: Pequot Press, 1973), 15-19, quotations on p. 15, 19.

²⁰ Destler, *Connecticut*, 21-25; “Sullivan Orderly Books,” 25 Aug. 1775 for quotation; Johnson, *American Commissariat*, 44-45.

²¹ “Account of the Plundering of Fisher’s, Gardiner’s, Plumb, and Block Islands, by the British,” 16 Aug. 1775, in Force, AA, 3:88. They also seized 1000 pounds of cheese and 7 tons of hay. The “payment” left by the British amounted to about twelve shillings.

²² For examples of Americans willing to supply the British, see David Burger to New York Congress, 1 Sept. 1775, in Force, AA, 3:624 and “Sheep, Swine and Poultry,” New York Congress, 14 Dec. 1775, in Force, AA, 4:412.

New Hampshire. These farmers may not have wanted (or were unable) to bring their cattle to Cambridge for slaughter until later in the summer or in the fall.²³

Curiously, meat from one common animal appeared not at all on the soldiers' list of daily rations. Sheep grazed throughout New England and America, but mutton and lamb did not have an official place in these soldiers' diets. The agricultural historians Percy Wells Bidwell and John I. Falconer argued that Americans generally disliked mutton because "the meat could not be successfully preserved by salting or smoking . . . [and] farmers didn't like the taste of fresh lamb or mutton, probably because of their own negligence in slaughtering."²⁴ Bidwell and Falconer, however, are mistaken on every count. People knew well how to make "mutton-hams" by hanging them "in the Woodsmoke for a Fortnight" and they had numerous recipes for roast mutton, stuffed leg of mutton, fried loin of lamb, stewed mutton chops, mutton hash, and fricasseed lamb. Those without their own lambs and sheep often purchased "mutton, Lamb, & Lamb heads" for their meals.²⁵ When Parliament's Boston Port Bill of 1774 (one of the Coercive Acts) closed the port, many towns throughout Massachusetts, New England, and as far away as the Carolinas sent food, cash, wood, clothing, and other supplies for "the relief of those honest, industrious poor, who are most distressed by the late arbitrary and oppressive Acts." They sent, collectively, over 2800 sheep and sometimes used the adjective "fat" to describe the

²³ Percy Wells Bidwell and John I. Falconer, *History of Agriculture in the Northern United States, 1620-1860* (Washington D.C.: Carnegie Institution of Washington, 1925), 27, 107-09; Johnson, *American Commissariat*, 10; Donahue, *The Great Meadow*, 213..

²⁴ Bidwell and Falconer, *History of Agriculture*, 110.

²⁵ For the recipe "To make Mutton-Hams," see Richard Bradley, *The Country Housewife and Lady's Director* (London: 1736), 15. For a pickled and smoked version, see Charles Carter, *The Complete Practical Cook* (London: W. Meadows, 1730), 201-02. The food historian Ivan Day states that "salt and smoked mutton was common throughout the British Isles until the early twentieth century;" personal correspondence, 15 March 2006. I thank Mr. Day for providing the references to Bradley and Carter. For lamb and mutton recipes available just prior to the Revolution, see Susannah Carter, *The Frugal Housewife, or Complete Woman Cook* (Boston: Edes and Gill, 1772), Evans fiche 12348, pp. 2, 4, 38, 66, 76, and 96. Joseph Vose's account book lists the lamb and mutton purchases of 22 individuals from 1760-1774; see "Joseph Vose Papers, 1760-1788," Ms. N-2073 (XT), MHS.

animals and their potential delectability.²⁶ So if New Englanders and Bostonians ate mutton and lamb prior to 1775, why did the soldiers' official daily rations omit those meats?

The answer most likely rests with the Continental Congress, which formed the Association in October 1774 to ban imports from Great Britain, halt the consumption of East India Company tea, and if necessary prohibit exports to Britain the following year. The Association's seventh article pledged that "We will use our utmost endeavours to improve the breed of sheep, and increase their number to the greatest extent; and to that end, we will kill them as seldom as may be, especially those of the most profitable kind; nor will we export any to the West-Indies or elsewhere." The eighth article spelled out why those sheep had been spared: "We will . . . promote agriculture, arts and the manufactures of this country, especially that of wool."²⁷ Within a month, deliveries of sheep to the poor of Boston had all but ceased, and they stopped altogether within two months' time.²⁸ Similarly, the Committee of the City and Liberties of Philadelphia urged inhabitants to follow the Association and to purchase no "Ewe Mutton" from January 1 to May 1, 1775, and no "Ewe Lamb" from January 1 to October 1. The Committee further discouraged farmers from selling any such items to butchers, and butchers from bringing such meat to city and suburban markets.²⁹ Finally, during the summer of 1775, the Massachusetts Provincial Congress recognized that its request for 13,000 coats would generate

²⁶ Quotation from the Windham, Connecticut, Committee of Correspondence to the Selectmen of Boston, 28 June 1774, in "Correspondence, in 1774 and 1775, Between a Committee of the Town of Boston and Contributors of Donations for the Relief of the Sufferers by the Boston Port Bill," *Collections of the Massachusetts Historical Society*, ser. 4, vol. 4 (Boston: Little, Brown, 1858), 7. I tabulated the total number of sheep donated to Boston's poor from this correspondence. For the adjective "fat," see pp. 44, 48. The town of Brookline specifically sent mutton; see p. 256.

²⁷ *JCC*, 1:78.

²⁸ These data come from "Correspondence, in 1774 and 1775."

²⁹ Committee of the City and Liberties of Philadelphia, "To the Public," 30 Nov. 1774, Evans fiche 13539.

“a very large demand for the Article of Wool, and inconceivable Mischief may ensue from delaying a speedy Provision for its Encrease.” So the Provincial Congress once again urged its citizens to “refrain from Killing any Sheep or Lamb, (except it be in Cases of absolute Necessity) till the further Order of this Congress or some future assembly of this Colony.”³⁰

Even without the Association, the vicissitudes of war and the New England environment would have made supplying mutton and lamb difficult. In order to deny British forces access to these animals, the Massachusetts Provincial Congress recommended that those living on islands and along the Atlantic coast “remove their Hay, Cattle, Sheep, &c. that are exposed to those ravages, and cannot be sufficiently guarded, so far into the country as to be out of the way of those implacable enemies to this people.” Washington’s desire to starve the enemy resulted in a similar action. “The great Scarcecity of Fresh Provision in their Army,” he explained, “has led me to take every precaution to prevent a Supply: For this purpose I have ordered all the Cattle and Sheep to be drove from the Low Grounds and Farms within their Reach.”³¹ This action disrupted established networks of supply and transportation, which would have complicated the commissaries’ job. Furthermore, removing the sheep from coastal areas--environments well suited to the animal’s quirky characteristics--meant overcrowding them on pastures, which “causes the sheep to take up much sand and earth into their stomachs with their food, which gives them an unthrifty appearance, and sometimes induces disease and death.”³² Lt.-Col.

³⁰ Massachusetts Provincial Congress, “In Provincial Congress, Watertown, June 29, 1775,” Evans fiche 14236.

³¹ Massachusetts Provincial Congress, 23 May 1775, in Force, AA, 2:818; George Washington to Continental Congress, 14 July 1775, GWP, available [http://memory.loc.gov/cgi-bin/query/r?ammem/mgw:@field\(DOCID+@lit\(gw030236\)\)](http://memory.loc.gov/cgi-bin/query/r?ammem/mgw:@field(DOCID+@lit(gw030236))). The British still captured great numbers of sheep, however, as in the raid on Gardiner’s Island, mentioned above.

³² Henry Stewart, *The Shepherd’s Manual: A Practical Treatise on the Sheep* (New York: Orange Judd Co., 1878), 20. Regarding the suitability of coastal areas, Stewart proclaims, “From personal observation of these

Loammi Baldwin brought sheep into camp at Chelsea, just to the northeast of Boston, and “the grazing land to which I was prepared that they should be confined to is so bare of feed that the Sheep are becom very poor and some have actually died. There are scarcely any among them that are in my measure fit to kill. . . .”³³ Finally, environmental conditions during the summer of 1775 had placed any surviving sheep at risk. The Massachusetts House of Representatives recognized that “by the scarcity of Hay [some sheep] are rendered necessary to be Killed” and that “the severe Drought in most Parts of the Colony render it impracticable for the Farmers to keep their whole Stock.”³⁴

The tangled effects of the removal policy become clearer when we see its impact on a particular location. The inhabitants of Chelsea agreed to move their cattle, horses, and sheep away from the British, but their testimony reveals that the animals “were so short of feed, that they Broke into and Spoiled a Considerable part of the mowing Land.” And with the livestock absent during the summer, “the feed thereof was Lost, and several of the Cattle, that were Drove Back, were Starved and Lost, and the Inhabitants of the Lower part of the town [closer to the British] were obliged to Carry back the Little hay they Cut, and the other produce of their farms . . . at Great Expense,” to their new residences as far as eight miles away. Chelsea itself suffered even further. Many houses and barns were “so torn to pieces by the Soldiers” and “so spoiled by

coast lands, the author is satisfied that no more healthful pastures exist anywhere, and nowhere is land cheaper or more easily brought into profitable condition to support flocks of sheep;” p. 251.

³³ Loammi Baldwin to Joseph Trumbull, 16 Aug. 1775, in GWP, available http://memory.loc.gov/cgi-bin/query/P?mgw:12::/temp/~ammem_KGtJ::

³⁴ *Journals of the House of Representatives of Massachusetts, 1775* (Boston: Massachusetts Historical Society, 1982), 14 Aug. 1775, vol. 51, pt. 1:71-72 (hereafter cited as *JHRM, 1775*). Another problem would come with winter’s approach: sheep need to get at the ground in order to eat, but according to one Bostonian snow fell more heavily towards the interior than at the coast. Therefore, “the greatest number of sheep are raised and kept on the sea-coasts and islands, where the snow does not lie so long as it doth in the inland parts.” To escape raids by the Royal Navy, Americans moved their sheep from areas that suited them biologically, to locations that made their survival difficult. See “A Letter concerning the American Manufactures,” Oct. 1775, in Force, *AA*, 3:1147.

said Soldiers” that some buildings had to be condemned. Soldiers demolished one barn, thirty feet wide and sixty feet long, simply for firewood. They also burned “a Great many hundred Rales and posts, that fenced in Considerable of the Inclosures of the town . . . and thereby Laid a Considerable part of the town [as a] Common, for some years.” Finally, they consumed and destroyed “a Considerable part of the corn, fruit, and Sauce [garden vegetables] of the town.” That the soldiers involved here belonged to the *Continental* Army reminds us that civilians and their environment do not suffer only at the hands of an attacking enemy.³⁵

The changes in how Americans used and thought of their sheep emerged from the actions of political and military leaders in the context of protest and war. By forming the Association the Congress took, according to historian Edward Countryman, “what may have been the most important single step in the transformation of the American movement from one of resistance to one of revolution.” Congress called for committees to be formed “in every county, city, and town” and to carry out what historian Pauline Maier called “disciplined collective coercion.” It wanted Americans to restrict not just their imports, but also “every species of extravagance and dissipation” such as horse-racing and cock-fighting, not to mention “other expensive diversions and entertainments.” That such calls for enforced morality included the environment should come as no surprise, given the long tradition (especially in Puritan New England) of “subduing” the “howling wilderness” of both its physical and spiritual dangers.³⁶ But governmental measures taken at this time would not remain limited in scope.

³⁵ The quotations come from a petition of the selectmen of Chelsea to the General Court in 1780, requesting a reduction in the town’s tax valuation. See Mellen Chamberlain, *A Documentary History of Chelsea, including the Boston Precincts of Winnisimmet, Rumney Marsh, and Pullen Point, 1624-1824* (Boston: Massachusetts Historical Society, 1908), 2:473-74.

³⁶ Edward Countryman, *The American Revolution* (New York: Hill and Wang, 1985), 5; *JCC*, 1:79, 78; Pauline Maier, *From Resistance to Revolution: Colonial Radicals and the Development of American Opposition to Britain, 1765-1776* (New York: Knopf, 1972), 280; Roderick Nash, *Wilderness and the American Mind*, 3rd ed. (New Haven: Yale University Press, 1982), 23-39.

The Association increased the government's power to make, almost by definition, "revolutionary" changes. Old habits and ways of thinking—buying imported goods, loyalty to Britain, eating mutton—had to be broken and replaced with new attitudes. For generations New Englanders had consumed vast quantities of lamb and mutton but now, with the start of the war, the soldiers' diet changed. The meat disappeared not because of changing fashions or because the animals had gone extinct, but because the Continental Congress had decreed it so. Congress's power was not absolute, of course, and small numbers of soldiers received modest amounts of lamb and mutton during the summer of 1775, but this situation differed from other instances when governments regulated components of the environment. Governments in the seventeenth and early-eighteenth centuries had tried to control everything from stray animals to white pines, but the situation in 1774 and 1775 differed in key ways.³⁷ With the start of the Revolution, of the War for Independence, and of what turned out to be the new American nation, the Continental Congress's actions established a broader scope and a new rationale for the government's role in dictating how Americans would use the environment. The land ordinances of the 1780s and the internal improvements of the nineteenth century lay well in the future, but governmental action in those projects could trace its roots back to the diets of American soldiers in 1775.

Tensions Escalate

³⁷ Two companies in Col. Samuel Gerrish's regiment, stationed at Chelsea, received 3772 pounds of lamb and mutton from 18 July to 3 Aug. 1775, according to the "John Pigeon Ledger," 29. Gerrish's men at nearby Pullen Point received 591 sheep on 19 Aug. 1775; see Chamberlain, *A Documentary History of Chelsea*, 2:506. For governmental efforts at controlling the environment, see Anderson, *Creatures of Empire* and Cronon, *Changes in the Land*.

Meat, bread, and drink reached Washington's men by wagon, rowboat, and sailing ship throughout the summer. The Royal Navy noticed this activity and tried to stop it. Admiral Graves could almost see the "Vessels laden with Arms and Ammunition, Provisions, Grain, Flour, Salt, Melasses, and Wood" plying the waters between Cape Cod and the Piscataqua River in New Hampshire. Because "the [British] Army is in great Want of Beef and Pork" and "the Lives of a very considerable number [are] depending upon speedily receiving fresh Meat," he gave his captains orders to seize the American ships and "prevent every kind of Supply getting to the Rebels by Sea." Other ships received orders to cruise the Bay of Fundy in Nova Scotia, protecting British transports from "any pyratyical Attempts of the Rebels."³⁸

Such efforts were frequently successful, but also often frustrated. In early August British forces seized about 1800 sheep and 100 oxen from several islands off the tip of New York's Long Island, which General Thomas Gage believed "will be some relief to the troops in general, and of great benefit to the hospitals," and loyalists continued to bring supplies into Boston.³⁹ Yet other expeditions failed when American ships intercepted British transports en route from Nova Scotia and England to Boston. Washington had three armed vessels on such duty in the vicinity of Boston harbor and one soldier reported that "the people of this Province, particularly on the coast, are much pleased with it, and we expect to derive no small advantage from it." At times, colonial Committees of Inspection also managed to prevent from sailing a number of ships that

³⁸ Graves to Captain Burnaby, 5 July 1775, in Graves, 1:134; Graves to Captain Wallace, 16 June 1775, in Graves, 3:441-42; Graves to Captain LeCras, 11 Aug. 1775, in Graves, 1:171-72.

³⁹ Gage to Earl of Dartmouth, 20 Aug. 1775, in Force, AA, 3:213; Gen. David Wooster to Gov. Jonathan Trumbull, 9 Aug. 1775, in Force, AA, 3:73. Andrew Hamilton, "a crafty, designing Person" who "does not give any good Reason for his taking Passage for Boston," was suspected "of affording Supplies to our Enemies," see *JHRM*, 1775, 11 Aug. 1775, vol. 51, pt. 1:67.

they suspected were bound for the British Army.⁴⁰ As a result those in Boston suffered and the threat of further privation loomed large; Graves reported that “wood is and will be too scarce and dear,” which meant that “we have no reliance on that Scheme [using the local contractor] of baking Bread this Winter” and “it will be difficult to provide Fuel to brew Spruce Beer for the Squadron.”⁴¹ The problem of acquiring and protecting supplies constantly worried and aggravated both sides.

Even more frustrating for the Royal Navy, American tactics also threatened the Navy’s ships. “The Rebels have collected near three hundred Whale Boats in the different Creeks round this Harbour [Boston],” Graves wrote in July, and given the boats’ design, “their Lightness and drawing little Water, they can not only outrow our Boats, but by getting into Shoal Water, and in Calms, they must constantly escape.” In the search for provisions, such boats could make amphibious landings “in the Night at the most defenseless parts of the Town” and raids that could “surprise one of the Frigates of the Squadron and . . . carry her by suddenly pouring in great numbers of People.” Indeed, the Americans tried the latter tactic during the nights of August 1 and 3, which led Captain Broderick Hartwell of the *Boyne* to remind Graves that “should the Rebels endeavour to burn the *Boyne* (which I think is far from being improbable) considering she lies out of the way of any ready assistance from the rest of the Squadron,” he would have difficulty repulsing the attack. His ship left England with a crew of 520 and now had only 325 men fit for service.⁴²

⁴⁰ “Extract of a letter from the Camp at Cambridge,” 1 Oct. 1775, in Force, AA, 3:926. For the actions of committees in Pennsylvania, Massachusetts, and Rhode Island, see Force, AA, 3:1262-63, 976, 974-75.

⁴¹ Graves to Stephens, 22 Sept. 1775, in Graves, 2:227. Sailors used spruce beer, among other items, to combat scurvy.

⁴² Graves to Stephens, 24 July 1775 and Hartwell to Graves, 4 Aug. 1775, in Graves, 1:154-55, 166-67.

Admiral Graves was “impatient to revenge the Insults shewn his Cruizers, and to scourge the Inhabitants of these Sea Port Towns where they had suffered and also of those places from whence the Privateers . . . were continually popping out so soon as a Merchant Ship appeared off.” Graves had tired of waiting for reinforcements and instructions that never came, so “he determined to wait no longer, but to annoy the Enemy in the best manner his small & crippled force would permit.”⁴³ With General Gage’s approval (although it fell short of providing troops), Graves ordered Lieutenant Henry Mowat of the *Canceaux* to lead a fleet to Cape Ann Harbour,

that Town having fired in the month of August last upon his Majesty’s Sloop *Falcon*, wounded her People and taken many Prisoners; you are to burn destroy and lay waste the said Town together with all Vessels and Craft in the Harbour that cannot with Ease be brought away. Having performed this Service you are to take the advantage of Wind and Weather, or any other favorable Circumstances, to fall upon and destroy any other Towns or places within the Limits aforesaid, and all Vessels or Craft to seize and destroy.

He particularly wanted to settle old scores, pointing Mowat to Portsmouth (“where the *Scarborough* people were wounded”), Falmouth [now Portland, Maine] (“where the *Gaspee* and *Canceaux* were threatened, the commander of the latter made prisoner for some hours”), and Machias (“where the *Margueritta* was taken, the Officer commanding her Killed, and the People made Prisoners”). He repeated his orders to make sure Mowat understood completely: “You are to go to all or to as many of the above named Places as you can, and make the most vigorous Efforts to burn the Towns, and destroy the Shipping in the Harbours.”⁴⁴ The principal focus of military action up to this point had been to control Nature’s bounty—the wood, animals, and

⁴³ Journal entries of 1 Sept. and 29 Aug. 1775, in Graves, 2:194-95 and 1:190-91. Graves did not keep this “journal” at the time of these events, but wrote it using the third-person voice in 1777, in part to defend the actions he took during his command. For background, see French, *The First Year*, 19.

⁴⁴ Gage to Graves, 4 Sept. 1775, in Graves, 2:197-98; Graves to Mowat, 6 Oct. 1775, in Graves, 2:250-51. I have followed Graves’s spelling of *Canceaux* (after all, he *was* the admiral), but some sources drop the final “x.”

grains upon which humans depended. When frustration led the Royal Navy to shift tactics and include colonial towns as part of its prey, the war took a harsher turn, with important consequences for the movement towards American independence.

The Burning of Falmouth

Mowat sailed into a region that had bedeviled the British all summer. Machias, perched at the northernmost end of the Maine coast, struggled with the privation and violence that characterized the entire seaboard. In May 1775, with insufficient crops because the previous fall's planting had been hampered by a severe drought and with trade now cut off, the inhabitants faced starvation. "We have no country behind us to lean upon," they explained in a petition to the Massachusetts Provincial Congress, "nor can we make an escape by flight; the wilderness is impervious, and vessels we have none." They asked for provisions, but not as charity; they would "pay the whole amount in lumber, the only staple of our country." The loyalist Ichabod Jones offered the residents provisions in return for that lumber, which he wanted to bring to the British Army in Boston, but the deal collapsed and the colonists decided "to take Captain Jones, if possible, and put a final stop to his supplying the King's Troops with any thing." In the ensuing battle Jones escaped but the townspeople seized one prisoner, one vessel, and a number of cannons and guns.⁴⁵

For the rest of the summer, the British met steady resistance as they sought to tap the region's forests for much-needed firewood. In July the people of Machias fought off one expedition and those at Majabigwaduce in Penobscot Bay defeated another, taking a total of

⁴⁵ "Petition from the Inhabitants of Machias to the Massachusetts Congress," 25 May 1775, in Force, AA, 2:708; Machias Committee to Massachusetts Congress, 14 June 1775, in Force, AA, 2:988-90 for the incident with Ichabod Jones.

about seven ships and forty prisoners.⁴⁶ The Royal Navy also tried to take the path of least resistance, working with loyalists and neutrals willing to accept payment in exchange for wood. In late September, Captain Thomas Bishop of the *Lively* filled two sloops with wood from the Fox Islands in Penobscot Bay, but only after he had “given these People the strongest Assurances that they shall be paid for their Wood before we leave them.” The islands’ inhabitants had hesitated “for fear of being destroyed by Col. [James] Cargill and his Ruffians from the Main.”⁴⁷ Such difficulties fueled the long-festering British frustration with and anger towards the coastal inhabitants; within a week of this incident Captain Henry Mowat sailed the *Canceaux* and three other ships into Falmouth’s harbor.

Following standard protocol, on October 17 Mowat sent an officer ashore to announce that the residents had two hours before he would “execute a just punishment on the Town of Falmouth” for “the most unpardonable rebellion” they had carried out against “the best of Sovereigns.” The town sent out a committee to negotiate and Mowat eventually agreed to hold his fire until the following morning if he received eight muskets as a token of the town’s agreement to turn over its cannon, arms, and ammunition. The town leaders parted with the muskets but knew they would never relinquish all of their arms. During the night “the sick, with the women and children, and as many of their effects as possible,” evacuated and at nine o’clock the next morning Mowat opened fire. According to the town’s official report, a “horrible shower of balls, from three to nine pounds weight, bombs, carcasses, live shells, grapeshot, and musket balls” continued, “without many minutes cessation, until about six o’clock, P.M., during which

⁴⁶ Anonymous report, 12 Aug. 1775, in Force, AA, 3:98; *JHRM*, 1775, 29 July 1775, vol. 51, pt. 1:24.

⁴⁷ Bishop to Graves, 7 Oct. 1775, in Graves, 3:510-11; *JHRM*, 1775, 11 Oct. 1775, vol. 51, pt. 1:155. Bishop estimated Cargill’s force at about 500 men.

time several parties came ashore and set buildings on fire by hand.” In the ensuing skirmishes the Falmouth forces suffered one man wounded and perhaps managed to kill several British soldiers. The grim accounting after the attack showed that Mowat had largely succeeded in carrying out Graves’s orders. About three-quarters of the town’s buildings had been destroyed, including about 130 dwellings (many housing two or three families apiece), a church, the new courthouse, the library, and “almost every store and warehouse in Town.” Fourteen ships were burned, several others seized, and “not much more than half of the moveables [goods] were saved out of the buildings that were burnt.”⁴⁸ In a region already suffering from privation, the inhabitants of what was once Falmouth faced a winter of extreme hardship.

News of this attack shocked Americans and hardened their resolve to resist “the Ministerial troops and navy.” George Washington confirmed to the Continental Congress reports of the attack, calling it “an outrage exceeding in Barbarity and cruelty every hostile Act practiced among civilized nations.” The Congress agreed, describing the burning of Falmouth as an act of “wanton barbarity and inhumanity that would disgrace savages.” It hoped that “the spirit and virtue of a sensible nation” could bring “justice for the innocent oppressed colonies and . . . restore harmony and peace to the British Empire,” but it also clearly stated its intentions: “the good people of these colonies will rely to the last on heaven, and their own virtuous efforts

⁴⁸ “H. Mowat, Commander of His Majesty’s Ship *Canceau*, to the People of Falmouth,” 16 Oct. 1775, in Force, AA, 3:1153; “Account of the Destruction of the Town of Falmouth, October 18, 1775,” in Force, AA, 3:1169-73; William Howe to Earl of Dartmouth, 27 Nov. 1775, in Force, AA, 3:1680. Howe reported that the Navy suffered no losses, but the Falmouth selectmen thought several had been killed. Graves noted that 139 houses and 278 storehouses were burned and that the damage amounted to £150,000. See Graves, 2:283. Allen French criticized Falmouth’s feeble attempt at resisting the attack. During the night reinforcements could have been brought in from outlying areas to fight the British parties that came onshore, thereby saving more of the town; see French, *The First Year*, 541-42.

for security against the abusive system pressed by administration for the ruin of America and which if pursued must end in the destruction of a great Empire.”⁴⁹

Beyond the highest levels of government, individual opinions ran equally hot. “[T]he cannonading [of] our maritime Towns, and the Destruction of Falmouth demonstrates, the malicious Purpose of our Enemies to execute, their unrelenting Vengeance by every Means in their Power,” wrote Josiah Quincy. “Good God! what savage Barbarity! Let us no longer call our Selves *Englishmen* but free *born Americans*. Let us unitedly exert every Faculty to confound the Devices, and frustrate the hostile Attempts of our Enemies! We must, or Vassalage, if not an ignominious Bondage will, inevitably be the Consequence.” James Warren echoed these feelings, asking “What can we wait for now[?] What more can we want to Justifie any Step to take, Kill, and destroy, to refuse them any refreshments, to Apprehend our Enemies, to Confiscate their Goods and Estates, to Open our Ports to foreigners, and if practicable to form Alliances &c. &c.” Abigail Adams remarked, “Unsearchable are the ways of Heaven who permitteth Evil to befall a city and a people by those very hands who were by them constituted the Gaurdians and protecters of them.” One writer, calling himself “A Freeman,” went even further and used the attack on Falmouth as a springboard for a bold demand for American independence.

The savage and brutal barbarity of our enemies in burning Falmouth, is a full demonstration that there is not the least remains of virtue, wisdom, or humanity, in the British court; and that they are fully determined with fire and sword, to butcher and destroy, beggar and enslave the whole American people. Therefore we expect soon to break off all kind of connection with Britain, and form into a Grand Republic of the American United Colonies, which will, by the blessing of

⁴⁹ Washington to Continental Congress, 24 Oct. 1775, in Force, AA, 3:1151; JCC, 29 Nov. 1775, 3:391.

heaven, soon work out our salvation, and perpetuate the liberties, increase the wealth, the power and the glory of this Western world.⁵⁰

The burning of Falmouth, which resulted from a policy born out of the British Army and Navy's inability to secure reliable sources of food and fuel, helped Americans take a critical step towards independence from Great Britain. "We have a glorious prospect before us," declared "A Freeman," "big with everything good and great." While Lexington, Concord, Bunker Hill, the actions of the Continental Congress, Parliamentary decisions, and royal decrees all brought Americans to this point, one must also remember the environmental foundation that supported such developments. Sheep, cattle, and trees usually receive little credit for contributing to the Revolution, but places like the Maine coast, along with its high-spirited inhabitants, played an important role in the combination of factors that intensified revolutionary feeling during the first year of the war.

Surviving the Winter

In the end, the Royal Navy did not burn other towns. Mowat's ships had been damaged by the pounding of their own cannons during the bombardment and they had little ammunition remaining for subsequent attacks. And with towns now fortifying their defenses, the British turned from this scorched earth policy and focused instead on surviving the coming winter. Conventional eighteenth-century armies like this one, bottled up as it was in Boston, rarely conducted winter campaigns. Given how well the Americans had entrenched themselves around

⁵⁰ Josiah Quincy to John Adams, 25 Oct. 1775, in Robert J. Taylor and Gregg L. Lint, eds., *Papers of John Adams* (Cambridge: Belknap Press, 1979), 3:248-49; James Warren to John Adams, 20 Oct. 1775, in *Papers of John Adams*, 3:222; Abigail Adams to John Adams, 25 Oct. 1775, in L.H. Butterfield, Wendell D. Garrett, and Marjorie E. Sprague, eds., *Adams Family Correspondence*, vol 1: December 1761-May 1776 (Cambridge: Belknap Press, 1963), 1:313. The last quotation comes from "A Freeman," writing in the *New England Chronicle*, and appears in David McCullough, *1776* (New York: Simon and Schuster, 2005), 63.

Boston, Admiral Graves and General William Howe (who replaced Thomas Gage in October) had few options and little incentive to do otherwise. And without sufficient shipping to move the men, supplies, and loyalists, the British had to settle in until spring.⁵¹

The British Army, according to Boston inhabitants, faced dire circumstances. In October James Warren interviewed one man who reported that “fresh provisions are very scarce. 1/sterling per pound and no vegetables, the meat Excessive poor, that the Troops have not been served with it but twice during the Summer and Fall, that their Duty is very severe and they Continue sickly about 1500 in the Hospitals” The citizens of Boston suffered much the same. According to one fisherman, “no Language can paint the distress of the inhabitants, most of them destitute of wood and of provisions of every kind. The Bakers say unless they have a new supply of wood they cannot bake above one fortnight longer—their Bisquit are not above one half the former size.” What could any of these people do? According to the fisherman, “The Soldiers . . . are uneasy to a great degree, many of them declareing they will not continue much longer in such a state but at all hazards will escape; the inhabitants are desperate, and contriveing means of escape.”⁵²

Putting these descriptions into quantifiable terms, a report at the end of November listed the available British supplies. Based on a force of 12,000 men (although the previous month saw about 6400 fit for duty and another 1400 sick in quarters or hospital), William Howe had enough pork and fish to last only until February 26 and enough wheat, flour, and bread to make it to March 24. To warm these men and cook their food, the Barrackmaster-General had on hand 668

⁵¹ French, *The First Year*, 544, 527; Middlekauff, *The Glorious Cause*, 304; Howe to Dartmouth, 26 Nov. 1775, in Force, *AA*, 3:1672.

⁵² James Warren to John Adams, 20 Oct. 1775, in *Papers of John Adams*, 3:219; Abigail Adams to John Adams, 21 Oct. 1775, in *Adams Family Correspondence*, 1:306.

cords of wood and 899 chaldrons (or about 29,000 bushels) of coal. Using the Continental Army's calculation of 1.5 cords of wood per week per one hundred men, the British barracks would turn chilly around January 7, certainly an unwelcome prospect. For their 674 horses, 100 cattle, and 400 sheep, Howe had sufficient hay to last until March 7 and enough oats, corn, and bran to reach the end of April.⁵³ "Our condition is better than it has lately been," wrote a British officer at the time, "but it is still far from comfortable. . . . Many of our men are sick, and fresh provisions very dear." American intelligence painted a somewhat bleaker picture. "Provision is very scarce," reported Capt. Richard Dodge to Washington in mid-December, "the officers say not more than enough to last them six weeks. One of the gentlemen says he dined with a man that dined with Lord Percy, a few days ago, upon horse-beef." For fuel, the British soldiers had "Orders from General Howe, to pull down the Old North Meeting-house, and one hundred wood houses."⁵⁴

The army's survival depended once again upon control of those essential components of the environment: wood, animals, and edible plants. Military action for both the British and the Americans focused on acquiring these materials and keeping them out of the hands of the other side. Graves urged Captain James Wallace to cruise the Rhode Island coast and "take every opportunity of getting Cattle for us, for our existence this Winter depends on Supplies of fresh Provisions for the People. If you can procure Potatoes, Turnips, Carrots, whether by Ravage or Purchase, send them here." As the winter progressed the terrible weather hampered the Navy's

⁵³ For troop numbers as of October 1775, see French, *The First Year*, 530, especially note 8. For the returns on provisions, fuel, and forage, see the statements dated 27 Nov., 29 Nov., and 1 Dec. 1775, in Force, AA, 4:160-62. For the burning of wood, see the report by Thomas Mifflin, Quartermaster-General, in Washington's letter to the Continental Congress, 12 Oct. 1775, in Force, AA, 3:1045. A cord of wood measures four feet high, four feet deep, and eight feet long.

⁵⁴ "Extract of a letter from an officer at Boston, to a friend in Edinburgh, 2 Dec. 1775," in Force, AA, 4:159; Dodge to Washington, 16 Dec. 1775, in Force, AA, 4:299-300.

ability to protect these ships. “The *Cerberus* had the Ordnance Brig under Convoy several days,” explained Graves in on letter, “[and] was twice with her within a few Leagues of the Lighthouse, and yet from thick Weather and Gales of Wind they parted Company . . . At last she was taken by a Rebel Privateer.” Other vessels simply could not land because of the “prevailing winds southeast and northwest, hard Gales each way, and with the former thick Weather, Rain, Snow and Ice without a friendly Port to push for except Boston.” A fleet of 36 supply ships departed Great Britain in October and November, hit terrible storms and American privateers, and only 13 vessels reached Boston. Upon opening the holds, the sailors found 183 of the 200 tons of potatoes had rotted.⁵⁵

Graves understood the dimensions of the problem facing the British forces. They would have difficulty acquiring supplies from the colonists because “the Resolves of the Congress respecting nonimportation &c will greatly impede our having provisions regularly.” So, he informed the Ministry, “Upon the whole I beg leave to offer it my opinion that we should not rely on the Continent of North America for Supplies of Provisions this Winter.” In the short term, these environmental circumstances forced the British to revise their plans. As the British faced ever greater pressures to supply their men with grain, meat, and wood, they shifted their strategy and geographical focus. They had once hoped to isolate and starve the “seat of revolution” in Boston, but instead the British found themselves increasingly alone, cold, and hungry. William Howe knew he had to relocate to New York, where a superior port, richer

⁵⁵ Graves to Wallace, 11 Nov. 1775; Graves to Stephens, 28 Dec. 1775 and 4 Dec. 1775, in Graves, 2:293-94, 353, 331; Bowler, *Logistics*, 53-54.

hinterland, and friendlier population could better meet the army's demands. The struggles over provisions, therefore, shifted the terrain upon which the war was fought.⁵⁶

The new strategy would also fail, however, because first year of the war demonstrated a truth that haunted the British for the remainder of the war, whether in New York or elsewhere: they suffered from what R. Arthur Bowler called the "inability of the army to obtain any dependable supply of provisions in North America." Because British forces could not rally popular support among the Americans, they "could control little more than those areas actually occupied in strength by the army and only as long as they were so occupied," and therefore "could not expect supplies from any area it did not occupy."⁵⁷ Relying on Great Britain for provisions meant depending upon a bureaucracy three thousand miles away that was often inefficient, incompetent, and wracked by internal bickering and competition. British forces did not lose the war because of trees, animals, and grains, but its inability to obtain and control these components of the environment contributed to its defeat.

Hay and Wood

Washington faced supply problems of his own. In early November he asked the Massachusetts General Court for 200 tons of hay to feed the animals in the Continental Army. Finally, in mid-December, the Court required fifty-two towns in eastern Massachusetts to provide English and salt hay, their quotas ranging from one to fourteen tons. Wary that any delay might produce "very great Inconveniencies, and perhaps fatal Consequences," the Court

⁵⁶ Graves to Stephens, 22 Sept. 1775, in Graves, 2:228. I thank Joseph Cullon for some of the insights described here.

⁵⁷ Bowler, *Logistics*, 239-40.

named a committee to oversee local compliance.⁵⁸ That group need not have worried about Concord, which acted quickly and took special pains to fulfill its quota of five tons. While the General Court allotted £5 per ton of English hay, the selectmen of Concord realized that “said hay cannot be obtained for said Sum” and resolved, with the Committee of Correspondence, to purchase the hay “as Cheep as possible and the [surplus?] to be Drawn out of the Town Treasury and for Conveying the said hay to Cambridge.” Lexington and Reading likewise opened their coffers in order to meet, as the selectmen of Reading declared, “whatever it Costs more then £5 per Ton at Cambridge.”⁵⁹

Other communities, however, did not follow the example set by these towns. Natick and Waltham held town meetings in December and January, respectively, but the minutes record no discussions about the hay quota. Watertown, Lincoln, Malden, Medford, and Weston did not even convene any town meetings during these winter months. Despite such inconclusive negative evidence, subsequent actions by the General Court indicate that some towns had not given their due. On 16 Jan. 1776, the Court established “the Rate of Six Pounds per Ton for English, and 50s. [shillings] per Ton for Salt Hay” because the previous allowance fell “below the Market Price and short of what has been usually given by the Inhabitants of this colony, under a like Scarcity with the present.”⁶⁰ Could a mere handful of shillings and pounds have led

⁵⁸ Washington’s request to the General Court came 2 Nov. 1775; see Force, AA, 3:1336. For the town allocations, see *JHRM, 1775-1776*, 16 Dec. 1775, vol. 51, pt. 2:50-51.

⁵⁹ Concord, Massachusetts, 29 Dec. 1775, “Town Records Vol. 4: 1746-1777,” p. 432, in *Early Massachusetts Records* (hereafter cited as EMR), Concord microfilm reel 3; Lexington, Massachusetts, 1 Jan. 1776, “Records of Town Meeting and Selectmen, 1755-1778,” p. 256, in EMR, Lexington microfilm reel 1; Reading, Massachusetts, 8 Jan. 1776, “Record of Town Meetings, 1774-1827,” p. 16, in EMR, Reading microfilm reel 1. The General Court paid 40 shillings per ton of salt hay, but none of these communities produced this item.

⁶⁰ The minutes for the meetings of these towns can be found in the EMR collection of microfilm. See the “First book of Records for the Parish of Natick, 1745-1803;” “Records of Waltham, 1758-1786, p. 289;” “Watertown’s Sixth Book of Records, 1769-1787;” Lincoln’s “Records, 1754-1806;” Malden’s “Records, Proceedings, Vol. 2;” Medford’s “Records of the Town of Medford, Vol. 3, 1735-1781;” and Weston’s “Town Records, 1746-1803.” For the Court’s actions, see *JHRM, 1775-1776*, vol. 51, pt. 2:147-48.

these townspeople to withhold their hay from the Continental Army? This question suggests that prices trumped patriotism. James Warren reported that Washington “has offered 5/. per [ct?] for hay and 20/. per Cord for wood, and cannot be supplied. This he Imputes to a Monopolizeing Avaritious Spirit and perhaps not wholly without foundations.” On a matter unrelated to hay, Washington angrily noted there was “such a dearth of Publick Spirit, & want of Virtue; such stock jobbing, and fertility in all the low Arts to obtain advantages” At the end of November he faced the prospect of the Connecticut troops returning home, “and such a dirty, mercenary Spirit pervades the whole, that I should not be at all surprizd at any disaster that may happen.”⁶¹ Other factors, however, may have affected the hay quota, so an examination of the towns’ ability to supply hay provides an environmental perspective that may clarify this issue of popular support for the Continental Army and for the revolutionary cause.

The inhabitants needed hay to feed their animals during the winter, so did they have a surplus they could send to the army? According to James Warren, “we are to Supply the Army with Hay and wood, which our people say they can’t do and keep their Cattle now fat over the winter. This has Occasioned great difficulty here.” A survey of fourteen towns within a 25-mile radius of Boston (see Map 2) reveals that in 1771 most locations harvested fewer tons of hay than needed by the animals. The data in Table 2 show that towns such as Dedham, Weymouth, and Woburn produced less than 70% of the hay that the horses, cattle, oxen, and sheep would consume; that Bridgewater, Lexington, and Reading produced less than 80% of their needs; and Concord and Weston harvested less than 90% of what the animals would have eaten. Even

⁶¹ James Warren to John Adams, 5 Nov. 1775, in *Papers of John Adams*, 3:281; Washington to Joseph Reed, 28 Nov. 1778, in *The Papers of George Washington: Revolutionary War Series*, ed. W.W. Abbot et al., (Charlottesville: University Press of Virginia, 1987), 2:449. In a much-quoted observation, Washington went on to write, “could I have foreseen what I have, & am like to experience, no consideration upon Earth should have induced me to accept this Command.”

towns like Marlborough and Sudbury, which met 94% and 91% of their hay requirements respectively, would have been hard pressed to send several tons of the crop to the army. Only the towns of Brookline, Ipswich, Malden, and Roxbury, all of which had the benefit of salt marshes to supplement their hay production, could comfortably meet the General Court's demands.⁶²

Taken at face value, these figures indicate a scarcity of hay for local use; one marvels that any amount, even just one or two-ton allotments, reached the Continental Army. Yet these data cannot simply be taken at face value. On the one hand, the shortage of hay may have been less dire than has been described; during the winter these creatures ate a variety of foods, including oats, rye, turnips, cabbages, carrots, beans, pumpkins, and corn (including the stalks and husks).⁶³ An increase of this diet may have allowed some towns extra cartloads of hay to send to the army. On the other hand, the tax lists may have underreported livestock numbers because, as mentioned earlier, farmers grazed cattle in western Massachusetts, New Hampshire, and

⁶² James Warren to John Adams, 5 Nov. 1775, in *Papers of John Adams*, 3:281; *The Massachusetts Tax Valuation List of 1771*, Bettye Hobbs Pruitt, ed., (Boston: G.K. Hall, 1978), provides the numbers of horses, oxen, cattle, and goats/sheep, along with the number of tons of English/upland hay, meadow hay, and salt hay harvested. The tax assessors combined the numbers of goats and sheep were combined in one column, but I have found no evidence of goats being kept on farms in these towns, or in eastern Massachusetts generally. The amount of hay these animals would consume comes from a formula found in Merchant, *Ecological Revolutions*, 179-81. She followed an 1840 Maine debt law that determined a cow needed 1.5 tons of hay for winter fodder, a horse needed 2 tons, and that 10 sheep would need 2 tons. She calculated that oxen (adult castrated males) ate as much as cows (mature females). Merchant also mentioned two other debt laws: an 1835 Connecticut law allocated two tons of hay for ten sheep and one cow, while an undated Massachusetts law determined that two tons would support six sheep and one cow. I follow Merchant's use of the 1840 Maine law and therefore weight my calculations towards a relatively greater consumption of hay. The calculation that a horse requires two tons of hay, however, is supported by Arthur Young, *Rural Oeconomy: Or, Essays on the Practical Parts of Husbandry*, 2nd ed. (London: T. Becket, 1773), 10.

⁶³ Young, *Rural Oeconomy*, 29, 94; *Georgick Papers for 1809* (Boston: Massachusetts Society for Promoting Agriculture, 1809), 9-11; *Papers: Consisting of Communications made to the Massachusetts Society for Promoting Agriculture, and Extracts* (Boston: Adams and Rhoades, 1807), 21, 35-37, 79-85; Henry Stewart, *The Shepherd's Manual*, rev. ed. (New York: Orange Judd Co., 1881), 59-60. To complicate matters further, different kinds of hay have different nutritional values. For the farmers who consider meadow hay only half as good as upland hay, see *Papers: Consisting of Communications*, 30. For a study that claims salt hay "has from 10 to 18 per cent less feeding value than average English [upland] hay," see Henry Follansbee Long, "The Salt Marshes of the Massachusetts Coast," *Historical Collections of the Essex Institute*, 47 (January 1911), 8.

Vermont during the summer, possibly out of the tax assessors' sight.⁶⁴ Furthermore, farmers in 1775 probably had less hay available to them than what was reported on the 1771 lists. The months of May, June, and July in 1775 experienced only 19 days of rain, while those same months in 1771 had rain on 32 days. "Tis exceeding dry weather," Abigail Adams wrote to her husband John on 25 June 1775. "We have not had any rain for a long time. Bracket has mowed the meadow and over the way, but it will not be a last years crop." About one week later, Cotton Tufts wrote to John Adams, "The Season has been very dry—from Boston to Scituate on the Sea Shore extending about 10 Miles back—in Weymouth not more than half the Hay on Upland that was produc'd last Year."⁶⁵ If the 1771 tax list reveals that many towns struggled to produce enough hay, dry weather in 1775 made that effort even more difficult.

Recent agricultural trends also pushed some towns to the brink of sustainability. From the years 1749 to 1771, farmers in Concord increased their number of cows but their hay production dropped by over 200 pounds an acre over that same time. According to Brian Donahue, "the downward trend would prove enduring: the yield from the meadows was slumping toward the soggy bottom where it would lodge throughout the early decades of the nineteenth century." Since lower hay yields "limited the number of livestock that could be kept in towns like Concord in the eighteenth century," a corollary must also hold true: steady or growing numbers of animals limited the amount of hay available for the Continental Army.⁶⁶

⁶⁴ Johnson, *American Commissariat*, 10; Donahue, *The Great Meadow*, 213.

⁶⁵ The meteorological data come from the diary accounts of Jeremiah Green and John Tudor of Boston in 1771, and from Belcher Noyes in Boston in 1775. The 1775 data for the towns of Scituate, Cambridge, and Concord, although less complete, generally follow Boston's patterns. See *Historical Climatology of New England and New York, Pennsylvania, New Jersey*, Climate Change Institute, University of Maine, <http://www.umaine.edu/oldweather/index.asp> For the quotations from Abigail Adams to John Adams, 25 June 1775, and from Cotton Tufts to John Adams, 3 July 1775, see *Adams Family Correspondence*, 1:232, 237.

⁶⁶ Donahue, *The Great Meadow*, 208, 210.

Maybe patriotism spurred Concord to use town money to pay for its quota of five tons, but that money was necessary probably because a shortage of hay had raised its price.

The scarcity of an even more important item—wood—threatened to dissolve the entire army. Washington told a committee from the General Court on November 1 that “I did not believe that we had then more than four days’ stock of wood beforehand. I little thought that we had scarce four hours’, and that different Regiments were upon the point of cutting each others’ throats for a few standing locusts near their encampments, to dress their victuals with. This, however, is the fact.” He warned that “this Army, if there comes a spell of rain or cold weather, must inevitably disperse; the consequence of which needs no animadversion of mine.” Already struggling with the task of reenlisting his men (those from Connecticut were scheduled to leave December 10, and the rest of the troops on December 31), Washington believed that “the distress of the soldiers in the article of wood will, I fear, have an unhappy influence upon their enlisting again.”⁶⁷ The most serious threat facing the Continental Army, therefore, came not from the British forces but from their own diminishing woodpiles.

Given this alarming situation, Washington’s men did not just sit idly by. Some soldiers voluntarily joined the regular teams of woodcutters, while others followed orders to prepare charcoal or deliver the wood to the various camps. Washington urged the General Court to follow up on this last matter and “draw more teams into the service, or the Quartermaster-General [be] empowered to impress them.” Other soldiers however, driven by desperation, malice, or greed, violated general orders and cut down trees located on lands that were off-limits to all. General William Heath heard that “Great Destruction is made of the Timber and wood on

⁶⁷ Washington to General Court of Massachusetts, 2 Nov. 1775, in Force, AA, 3:1336. The subject of reenlisting is treated most completely in French, *The First Year*, chapter 31.

Sewall's Farm to the Great Injury of the young lady whose Property I am Informed it is, as well as to the Publick, as private property should ever be held most sacred, and inasmuch as his Excellency General Washington has repeatedly most strictly forbid all violations;" he ordered Col. William Prescott to "speedily and effectually prevent any further Destruction"

Similarly, General Charles Lee noticed that "the Trees on the Common Public Road Leading from the Camp to Mystick . . . have been Wantonly and Unnecessarily Cut down and Barked" and held the day's field officer responsible so that "no More Havock of this Kind is made" in the future.⁶⁸ Washington was saddened "to see so many valuable plantations of trees destroyed. I endeavoured (whilst there appeared a possibility of restraining it) to prevent the practice, but it is out of my power to do it. From fences to forest trees, and from forest trees to fruit trees, is a natural advance to houses, which must next follow." Furthermore, the shadow that profiteering cast over the hay supplies reached the forests as well. "Little or no wood is brought in," Washington noted in October, "and it is apprehended the owners keep it back to impose an unreasonable price."⁶⁹ The General Court addressed all of these problems in the months that followed.

Faced with Washington's request for 10,000 cords of wood (along with the 200 tons of hay mentioned previously), the General Court acted in early November. "We spent the whole of last Fryday and Evening [Nov. 3] on the Subject," wrote James Warren. "We at last Chose a

⁶⁸ For greater manpower in gathering fuel, see "Sullivan Orderly Books," 28 Oct. 1775, 19 Nov. 1775, and 17 Dec. 1775; Washington to General Court, 2 Nov. 1775, in Force, AA, 3:1336; Gen. William Heath to Col. William Prescott, 8 Oct. 1775, "William Heath Papers, 1774-1872," P-205, MHS, reel 1; "Sullivan Orderly Books," 11 Aug. 1775.

⁶⁹ Washington to General Court, 2 Nov. 1775, in Force, AA, 3:1336; Washington to Council of Massachusetts, 6 Oct. 1775, in Force, AA, 3:965. On profiteering, Gen. Nathanael Greene wrote, "The country round here set no bounds to their demand for hay, wood, and teaming. It has given his Excellency [Washington] a great deal of uneasiness that they should take this opportunity to extort from the necessities of the army such enormous prices." Greene to Henry Ward, 18 Dec. 1775, in Force, AA, 4:312.

Committee in Aid to the Quarter Master General to purchase those Articles, and Impowered them to Enter the wood Lotts of the Refugees, Cut, Stack, and procure Teems to Carry to the Camp wood as fast as possible The Teems are passing all day, and I hope this Step will be a radical Cure.” The committee also had the power to spend up to two thousand pounds of the colony’s money to purchase wood. Jonathan Green, for example, cut and carried over six cords of wood from Stoneham to “the Gard house, at Winnesimmit [near Chelsea]” during the last six weeks of the year. All of these efforts proved inadequate, however, so on December 2 the Court ordered twenty-five towns to fulfill a specific quota of wood (ranging from one to six cords) each day and haul it to a specific Continental Army camp.⁷⁰

As with the hay quota, these towns varied in the enthusiasm of their responses to this new demand. The Reading selectmen assembled two days later, apportioned their quota among the town’s three parishes, and named three supervisors to oversee the work in each parish. In a series of town meetings that stretched from December 1 to January 7, the people of Stoneham discussed nothing but their wood responsibility; eventually they decided to “proportion the above sd. wood . . . according to the province tax upon the inhabitants of sd. Stoneham.” The Lexington selectmen voted in mid-December to take 50 cords from town land, then on January 1 to cut 100 cords from town swamp land, and two weeks later cut another 150 cords from the swamp land (but protecting 30 maples at the southwest corner of the swamp). Finally, at the end

⁷⁰ Washington to General Court, 2 Nov. 1775, in Force, *AA*, 3:1336; James Warren to John Adams, 5 Nov. 1775, in Papers of John Adams, 3:281; Chamberlain, *A Documentary History of Chelsea*, 2:508. The army’s camp at Cambridge required 24 cords per day, supplied by the following towns and their quotas: Concord (3), Natick (3), Needham (5), Newton (6), Weston (6), and Waltham (4). The Prospect Hill (Charlestown) camp needed 16 cords per day and was supplied by Lexington (5), Bedford (4), Lincoln (3.5), Wilmington (3.5), and Watertown (3.5). Winter Hill (Medford) used 18 cords per day and was to be supplied by Medford (3), Stoneham (2.5), Malden (3.5), Reading (5), Woburn (5), and Wilmington (1). Finally, the Roxbury camp burned 17 cords per day and was supplied by Roxbury (2), Dedham (3), Stoughton (2), Dorchester (3), Braintree (4), Milton (3), Medfield (2), and Walpole (2). See *JHRM, 1775-1776*, vol. 51, pt. 2:9, 11. At this rate, the 10,000 cords would last from early November to mid-March.

of January the selectmen “Voted to Chuse a Committee to Sell off the remainder of the wood with all the [Pines?] both Standing and fallen in the Town Swamp where it has been already Cutt over for the Use of the Army.” Lexington, like Reading, also paid its residents to carry the wood to camp.⁷¹

Some towns, like Lincoln, Medford, Newton, Watertown, and Weston, held no meetings to discuss this issue. Others sought to lighten their burden. The selectmen of Malden, for example, sent a petition to the General Court “setting forth the inconvenience attending its supplying the Army with 3 Cords and an half of Wood daily, and praying Relief.” In another instance, the General Court eased Natick’s wood quota by one-third and excused the town from having to enlist nine men into the army; perhaps the town suffered from both a labor shortage and a lack of resources.⁷² In the face of this spotty compliance, the House of Representatives decided on December 26 to send its members to meet directly with the selectmen of the towns, reiterating “the Distresses of the Army” and “the great Danger the Country is exposed to from a Dispersion of the Army, which must take Place if it is not supplied with Wood.” The members hoped to obtain not just the previously-established quota amounts, but from each town “as much more as they possibly can, at least Half as much more as has been set on them as aforesaid.” Perhaps inspired by these face-to-face meetings, the towns of Bedford and Wilmington soon

⁷¹ Reading, Massachusetts, “Record of Town Meetings, 1774-1827,” p. 15, EMR, Reading microfilm reel 1; Stoneham, Massachusetts, “Town Records 1725-1777,” EMR, Stoneham microfilm reel 1; Lexington, Massachusetts, “Records of Town Meeting and Selectmen, 1755-1778,” pp. 255-57, EMR, Lexington microfilm reel 1; quotation from the meeting of 29 Jan. 1776, p. 257.

⁷² The minutes for the meetings of these towns can be found in the EMR collection of microfilm. See Lincoln’s “Records, 1754-1806;” Medford’s “Records of the Town of Medford, Vol. 3, 1735-1781;” Newton’s “Town Meetings 1759-1795;” “Watertown’s Sixth Book of Records, 1769-1787;” and Weston’s “Town Records, 1746-1803.” Malden held no town meetings during this winter, but its petition is mentioned in 15 Dec. 1775, *JHRM*, 1775-1776, vol. 51, pt. 2:44. The decision on Natick appears in 5 Dec. 1775, *JHRM*, 1775-1776, vol. 51, pt. 2: 14-15.

acted and Concord even voted to give twelve shillings per cord above the going rate of twenty-four shillings.⁷³

The Massachusetts government did not limit itself to pleading, however. Previously, it had allowed people to cut wood from the lots abandoned by those who had fled to Boston. Recognizing the ineffectiveness of that policy, the General Court now empowered a committee “to enter the Wood Lands of any Person or Persons within this Colony, and after apprizing the Wood thereon standing and growing, to cause the same to be cut down and carried to the Camp to supply said Army.” The committee would pay for all wood obtained in this manner, as well as the wages for the ax men and the owners of any teams used to haul the load away. The government’s use of power extended even further, for “if any Person, Owner and Proprietor of such Wood Land, shall molest or hinder the said Committee,” the members could “cause such Person to be arrested and sent to this Court, to be dealt with according to the Demerits of his Contempt.”⁷⁴ Of the fifteen town minutes consulted, none debated or even mentioned these new powers. The government demanded much of these towns now that war had begun, from equipping troops and paying their wages to forming committees of correspondence, inspection, and safety. Communities that once focused on their own concerns now had to defer to the larger issues of war. Robert Gross aptly described Concord’s situation: “In the process of fighting the British assault on their autonomy, the townspeople allowed state government to assume extraordinary power over their lives.”⁷⁵ The Continental Association had required Americans to

⁷³ See the House’s actions of 16 Dec. and 26 Dec. 1775, in *JHRM, 1775-1776*, vol. 51, pt. 2: 49, 76-77. Bedford acted on 1 Jan. 1776, see “Town Records 1773-1790,” p. 14, EMR, Bedford microfilm reel 1; Wilmington’s January 8 meeting is in “Town Meetings, 1730-1807,” p. 159, EMR, Wilmington microfilm reel 1. For Concord, see “Vol. 4: 1746-1777,” p. 433, EMR, Concord microfilm reel 3.

⁷⁴ 23 Dec. and 25 Dec. 1775, *JHRM, 1775-1776*, vol. 51, pt. 2: 67, 69, 71.

⁷⁵ Robert A. Gross, *The Minutemen and Their World* (New York: Hill and Wang, 1976), 133-34, quotation on p. 134.

forego mutton and lamb, and now the Massachusetts General Court forced residents to give up their wood.

The government's actions suggest that the army's fuel problem would be resolved if enough wood lots could be tapped, but did these towns have surplus wood to provide? This raises the issue of the size and composition of the forests surrounding Boston. How much forest remained in this region, could it supply the 10,000 cords Washington requested, and what environmental consequences would result from doing so? One can approach these questions by returning to Concord. In 1771 the town covered about 13,000 acres, of which pasture, tillage, fresh meadow, and English and upland mowing land totaled about 7800 acres, woodland about 3640 acres, and unimproved and unimprovable land about 1560 acres.⁷⁶ Each of Concord's 200 or so farms burned 20-30 cords each year, for a total of 4000-6000 cords used by the entire town.⁷⁷ Since an acre of woodland managed for fuel production would yield close to one cord per acre per year, Concord was perched at the brink of having insufficient land to support its fuel

⁷⁶ The pasture, tillage, and meadow acreage was calculated from *Massachusetts Tax Valuation List*, 194-201. Robert A. Gross estimated that this improved land comprised about 60% of all the land in the town; see his article "Culture and Cultivation: Agriculture and Society in Thoreau's Concord," *Journal of American History*, 69:1 (June 1982), p. 56, table 1, note d. Elsewhere, he stated that "I have assumed that half of all Concord land was forest and brush in 1749 and have applied a reported Concord figure of 40 per cent unimproved in 1784 to the 1771 data;" see Gross, *Minutemen*, 215, note 38. The 1771 list does not contain the categories "woodland" and "unimproved land," but Gross's data for land use in Concord from 1781-1801 show a fairly steady rate of 35-37% of the land as woodland and unimproved or unimprovable land, and about 27.6% as just woodland. See "Culture and Cultivation," p. 58, table 4. For my rough calculations here, I have used the figure of 28% woodland. But just to underscore how much approximation and guesswork is involved here, Donahue reminds us, "Even in nineteenth-century valuations the *total* reported acreage in Concord barely surpassed fourteen thousand acres, whereas the actual area of Concord is over sixteen thousand acres, so there was always plenty of acreage unaccounted for." See Donahue, *The Great Meadow*, 293, note 86.

⁷⁷ For the figure of 200 farms, see Gross, "Culture and Cultivation," 44 and Donahue, *The Great Meadow*, 214. Merchant, *Ecological Revolutions*, p. 157, uses the 30 cords per year figure while Michael Williams, *Americans and Their Forests: A Historical Geography* (New York: Cambridge University Press, 1992), 78 says the "typical rural household" used 20-30 cords annually. Donahue, *The Great Meadow*, p. 214, uses a consumption rate of 20 cords per year.

needs.⁷⁸ At this point, the General Court requested that Concord provide 3 cords a day during the winter, or about 400 cords in all. The residents could dip into their own woodpiles but, more likely, they cut standing timber. This would require an additional 400 acres of managed woodland, or 25-80 acres of unmanaged forest.⁷⁹ While these calculations are fraught with imprecision, it seems clear that Concord could not comfortably fulfill this new demand for wood.

A number of towns, like Concord, did not respond immediately to the General Court's first call for wood. Such a reluctance to meet this quota might simply indicate weak support for the war, but Concord's situation suggests a dynamic that must consider environmental realities. "Concord's woodlands were just adequate to supply the inhabitants with fuel indefinitely," Brian Donahue concluded; this precarious situation almost certainly occurred elsewhere in eastern Massachusetts and may have discouraged some farmers from supplying Washington's troops. Concord's farmers, like those elsewhere, practiced a sustainable interconnected form of agriculture, where "tillage land, grassland, and woodland were closely balanced against one another." A change in any one landscape, therefore, altered the others. "Had ways been found to expand the cultivated acreage there might have been more corn to eat and beef to sell,"

⁷⁸ The sustainable yield rate comes from Mollie Beattie, Charles Thompson, and Lynn Levine, *Working With Your Woodland: A Landowner's Guide* (rev. ed., Hanover, NH: University Press of New England, 1993), 38. Donahue, *The Great Meadow*, states that "By rule of thumb, the sustainable production of New England woodland is one cord per acre per year or perhaps a bit less;" p. 214. I have followed Donahue's lead in combining the acreage of woodland with that of unimproved land because, as he states, "whether such land was cutover woods or overgrown pasture, it was on its way to becoming forest again;" p. 214.

⁷⁹ The figure of 400 cords comes from the daily quota multiplied by 133 days, which in turn comes from Washington's request of 10,000 cords divided by the army's usage of 75 cords per day. See note 52 above. The figure of 25-80 acres of unmanaged forest comes from Beattie, Thompson, and Levine, *Working With Your Woodland*, p. 38, who state, "Typically, an unmanaged New England forest contains from five to fifteen cords of potential fuelwood that have accumulated as the stand grew" The 1771 tax list does not enumerate acres of woodland, let alone how much, if any, was unmanaged or "virgin." Providing a useful caution on these sorts of calculations, Williams, *Americans and Their Forests*, p. 81, states, "It is difficult to convert cords into stands of trees, an exercise that demands an analysis of yield, and these vary enormously under different environmental conditions of soil, moisture, climate, the degree of destruction by fire and disease, and the species of tree." Although such variation would be relatively limited by focusing on the area surrounding Boston, Williams's point should be heeded.

Donahue mused, “but the kitchen would have been colder.”⁸⁰ Nevertheless, Concord provided the wood. While a general relationship may exist between environmental circumstances and revolutionary feeling—sufficient resources permits enthusiastic support—in the cases of Lexington and Concord, both of which fulfilled their hay and wood quotas, perhaps their involvement at the outbreak of hostilities boosted war fever to an intensity that brushed aside any qualms the selectmen may have had about cutting the dwindling woodlands. The 400 cords Concord supplied did not knock its agricultural system out of balance; similarly, the forests around Boston probably tolerated the extraction of the 10,000 cords that Washington so desperately needed.

Endings and Beginnings

Although Washington made no further requests to the General Court for wood, supply problems continued to dog him during the early months of 1776. Officers fought over piles of boards to finish constructing barracks; a soldier was charged with the “crime” of “getting wood;” and flour supplies ran dangerously low. Bostonians continued to suffer, especially as the siege heightened its intensity. On 13 March 1776, Timothy Newell saw “Soldiers and sailors plundering . . . houses, shops, warehouses--Sugar and salt &c. thrown into the River, which was greatly covered with hogsheads, barrels of flour, house furniture, carts trucks &c. &c.” Even after the British forces departed four days later, the Massachusetts House of Representatives had to appropriate £1000 so the Continental Army could purchase firewood. Nevertheless, with British troops finally gone from Boston (their occupation began in September 1768), the people of Massachusetts felt their doubts lift and their tensions ease. “I feel very differently at the

⁸⁰ Donahue, *The Great Meadow*, 214, 216. For details on the workings of this agricultural system, see chapters 7-8.

approach of spring to what I did a month ago,” wrote Abigail Adams to her husband at the end of March. “We knew not then whether we could plant or sow with safety, whether when we had toiled we could reap the fruits of our own industry, whether we could rest in our own Cottages, or whether we should not be driven from the sea coasts to seek shelter in the wilderness, but now we feel as if we might sit under our own vine and eat the good of the land.”⁸¹

The dawn of this new day would not shine as brightly in other places. Jonathan Green’s farm in Chelsea felt the ravages of the blockade as soldiers—Americans, not British—feasted on a cornucopia of food. During the summer and fall of 1775 Green lost 30 bushels each of green peas, cherries, and pears; 10 bushels of each of potatoes and roasting ears of corn; 5 bushels of turnips; 500 cabbages; and enough apples to make 30 barrels of cider. In fact, this accounting helps explain how American soldiers enhanced, or offset shortages in, their official rations of bread, meat, beer, rice, and peas. The soldiers also destroyed 4 tons of his grass and hay by tromping and lying upon it, and by allowing livestock to graze freely in the fields and pastures. Such destruction would have prevented Green, and others in similar circumstances, from contributing to the General Court’s hay quota. To a small degree, then, the shortages of hay felt at the camps in Cambridge, Prospect Hill, Roxbury, and Winter Hill came at the hands of their fellow Continental soldiers. In other places, the war marked the land more permanently. A gazetteer in 1785 observed that Roxbury, a town of about 7100 acres, had its woods “very considerably lessened in consequence of the extraordinary demand for the use of the American

⁸¹ Capt. Richard Dodge to Col. Loammi Baldwin, 2 Feb. 1776, in Chamberlain, *Documentary History of Chelsea*, 2:471; “Return of the Guards Camp on Winter Hill,” 20-23 Jan. 1776, in Sullivan, “Revolutionary War Orderly Books;” Col. Joseph Trumbull to Col. Jabez Huntington, 13 Jan. 1776, Huntington-Wolcott Papers, 1698-1778, Ms. N-1456, MHS; Newell, “A Journal,” 274; 20 March 1776, *Journals of the House of Representatives of Massachusetts, 1776* (Boston: MHS, 1984), vol. 51, pt. 3:24; Abigail Adams to John Adams, 31 March 1776, in *Adams Family Correspondence*, 1:370.

army encamped in and near the town, in the winter of 1775; there now remains about 550 acres of wood land,” or only about 8 percent of the total area.⁸²

Such changes came at a pivotal moment in the history of the New England environment, the nascent United States, and the relationship between them. Americans cut the forests and spared the sheep because an embryonic national and state government, as well as the military force they created, needed the fuel and wool. These institutions gained important powers at this time and began to mold a relationship between Americans and their environment that extends to the present day. More importantly, the Revolution unleashed new ideas about equality. Old notions of deference fell away before attacks on all sorts of distinctions, ranging from clothing and forms of address to concepts of human nature and moral character. Robert Gross has argued that in Concord, this change meant “the old deference to magistrates had weakened, and representatives were being treated not as ‘fathers’ but as hired agents of the people. The citizens of Concord were taking control of their political lives.” The people used such opportunities “to alter their own lives, to think new thoughts, to act on the best ideas of mankind, to liberate themselves from the dead weight of the past.”⁸³ That dead weight included the sustainable but limiting agricultural practices of the eighteenth century. During the first half of the nineteenth century, the people of Concord embraced commercial dairy farming and immersed themselves in the market economy. They cut the forests back to only one-tenth of the town’s land in order to make way for the hayfields and pastures required by the dairy cows. The American Revolution ushered in a new age and in every corner of the American landscape, the spread of the market

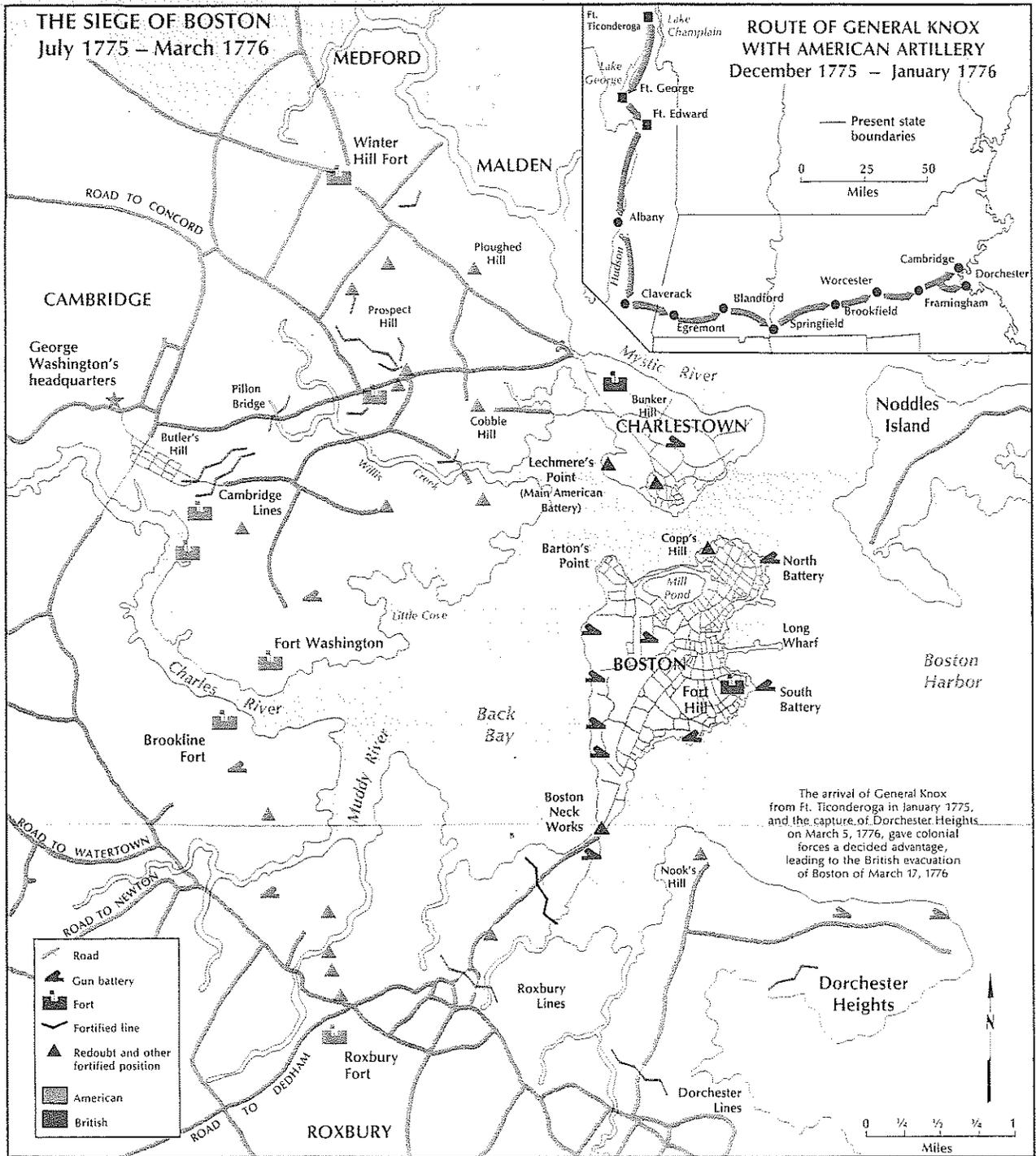
⁸² Chamberlain, *A Documentary History of Chelsea*, 2:475-77; *Geographical Gazetteer of the Towns in the Commonwealth of Massachusetts* (Boston: Greenleaf and Freeman, 1784-85), Evans fiche 44535.

⁸³ For notions of equality, see Gordon S. Wood, *The American Revolution: A History* (New York: Modern Library, 2002), 100, 120-21; for an extended discussion of the changes caused by the Revolution, see Wood, *The Radicalism of the American Revolution* (New York: Knopf, 1992). Quotations from Gross, *Minutemen*, 191.

economy and the process of turning more of nature into a commodity profoundly changed the environment.⁸⁴

In 1775 and 1776, however, this America—revolutionary in its social structure, government, economy, and use of the environment—lay beyond the horizon, hidden from those engaged in the War for Independence. But the struggles that America and Great Britain endured, shaped by the environmental necessities and realities of that first year, set the stage for much of what was to come.

⁸⁴ Donahue, *The Great Meadow*, 228. Ted Steinberg, *Down to Earth: Nature's Role in American History* (New York: Oxford University Press, 2002), xi, argues that the commodification of nature was the single most important force shaping the environmental history of the United States.



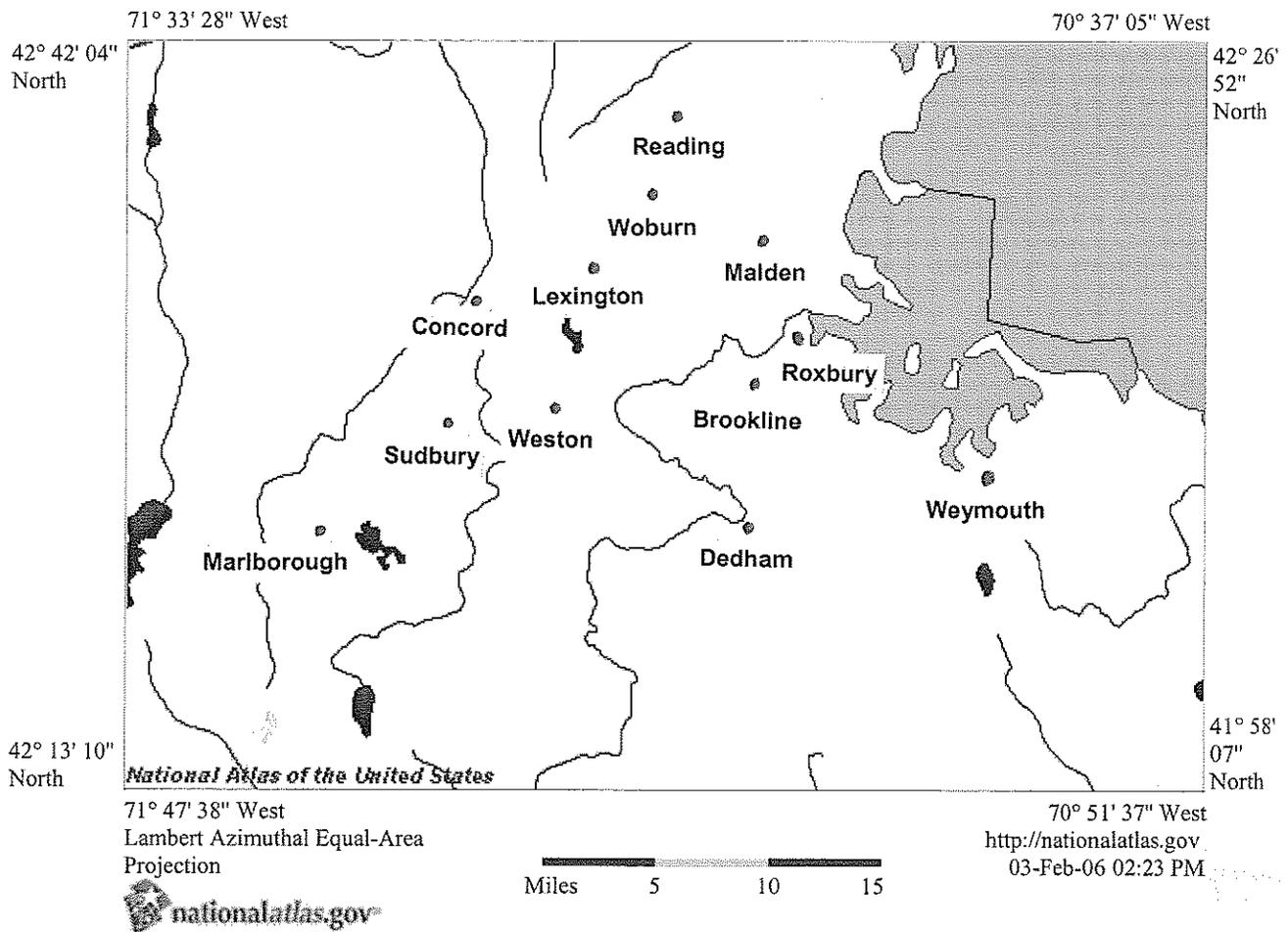
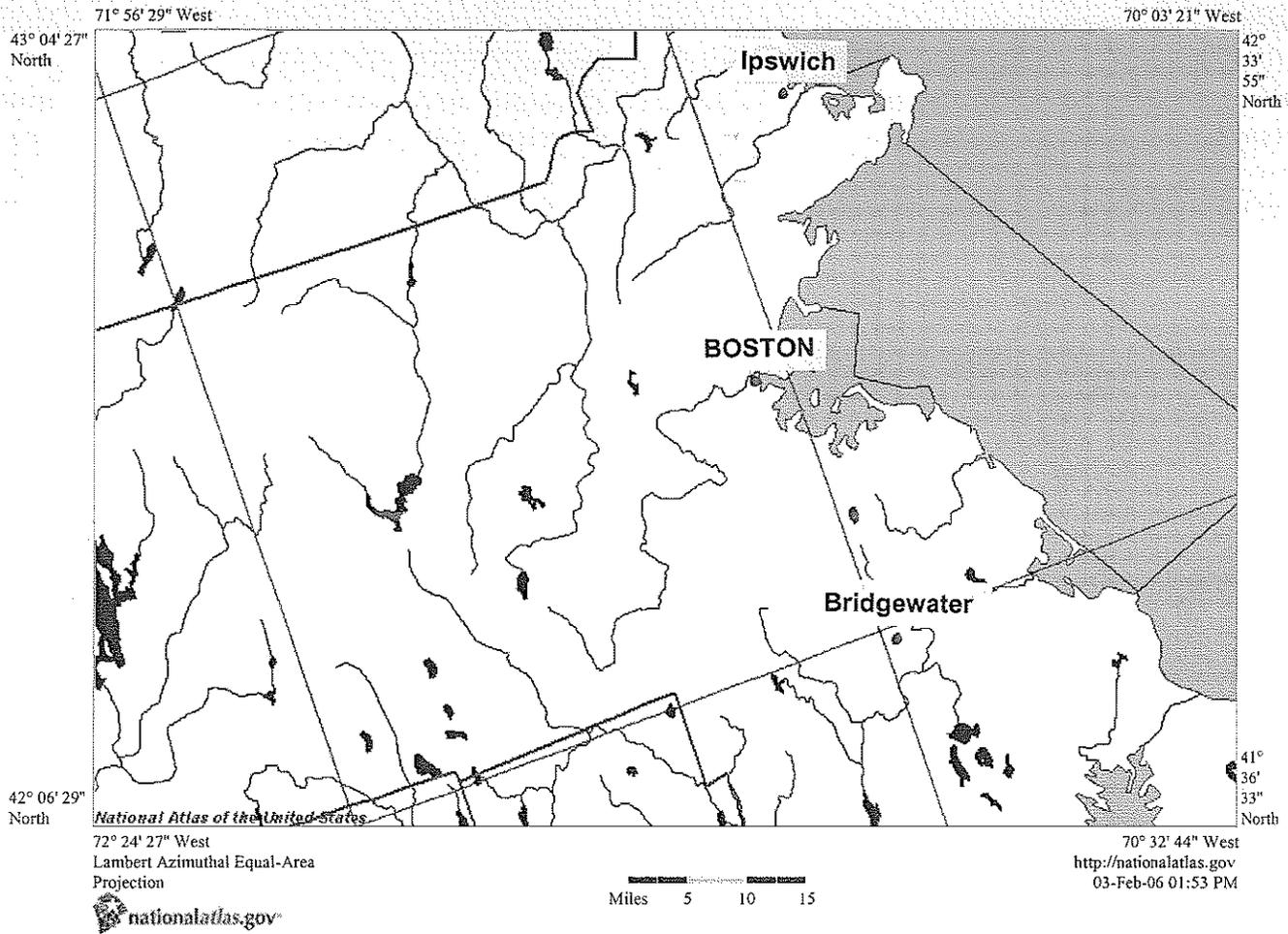


Table 1: Rations Received by Selected Massachusetts Regiments, Summer 1775
 (source: John Pigeon ledger, 1775, Ms. N-719, Mass. Historical Society)

Regiment	Dates	Rations	lbs. Bread	lbs. Pork	lbs. Beef	lbs. Fish	lbs. Veal	oz. Rice	pts. Beer	pts. Peas
Doolittle, Col. Ephraim	4/22-7/31	38539	38067	11056	21282	4904	4756	48394	66580	3489
Frye, Col. James	4/23-8/1	44445	44415	10146	24014	5580	9316	68822	95832	4485
Gardner, Col. Thomas	4/28-8/2	28944	28550	6356	17497	4200	3858	22536	61660	3429
Gerrish, Col. Samuel	4/23-8/2	35146	31374	7786	15426	3966	11033	49663	53308	2741
Mansfield, Col. John	5/16-8/2	36777	36065	3461	27532	5984	4708	58496	73016	4721
Nixon, Col. John	4/28-7/23	31116	30504	2523	21695	2746	7840	54621	65120	372
Patterson, Col. John, Jr.	4/29-7/12	28522	28522	8494	15414	4395	4382	36479	48024	2580
Scammons, Col. James	5/1-8/2	42093	41403	6146	28039	6900	6164	75616	70356	5471
Ward, Col. Jonathan	4/22-7/25	48803	48803	17955	22478	2728	10067	56189	102486	4510
Witcomb, Col. Asa	4/22-8/2	55203	54496	12615	29984	7384	10470	88522	114294	5801
Totals		389588	382199	86538	223361	48787	72594	559338	750676	37599

Table 2: Hay Consumption and Production in Fourteen Massachusetts Towns
 (source: Bettye Hobbs Pruitt, ed., *The Massachusetts Tax Valuation List of 1771* (Boston: G.K. Hall, 1978))

Town	Animals	Number	Tons of Hay needed*	Tons of Hay harvested			Hay harvested / hay needed	Hay Quota for Army in 1775	
				English	Meadow	Salt		(Tons)	(Type)
Bridgewater	Horses	551	1102						
	Cattle	1920	2880						
	Oxen	653	980						
	Goats/Sheep	2786	557						
	Total		5519	2108	2117		76.60%	6	English
Brookline	Horses	79	158						
	Cattle	232	348						
	Oxen	97	146						
	Goats/Sheep	106	21						
	Total		673	423	165	145	108.90%	9	English
							3	Salt	
Concord	Horses	212	424						
	Cattle	938	1407						
	Oxen	426	639						
	Goats/Sheep	715	143						
	Total		2613	650	1586		85.60%	5	English
Dedham	Horses	326	652						
	Cattle	1140	1710						
	Oxen	429	644						
	Goats/Sheep	1285	257						
	Total		3263	645	1600		68.80%	5	English
Ipswich	Horses	425	850						
	Cattle	1667	2500						
	Oxen	575	863						
	Goats/Sheep	4303	861						
	Totals		5074	1087	1240	3595	116.70%	5	English

Town	Animals	Number	Tons of Hay needed*	Tons of Hay harvested			Hay harvested / hay needed	Hay Quota for Army	
				English	Meadow	Salt		(Tons)	(Type)
Lexington	Horses	126	252						
	Cattle	584	876						
	Oxen	165	248						
	Goats/Sheep	357	71						
	Total		1447	385	758		79.00%	2	English
Malden	Horses	75	150						
	Cattle	455	682						
	Oxen	90	135						
	Goats/Sheep	403	81						
	Total		1048	285	299	569	110.00%	10	Salt
Marlborough	Horses	220	440						
	Cattle	926	1389						
	Oxen	424	636						
	Goats/Sheep	1041	208						
	Total		2673	1073	1446		94.20%	5	English
Reading	Horses	195	390						
	Cattle	843	1265						
	Oxen	262	393						
	Goats/Sheep	877	175						
	Total		2223	484	1144		73.20%	4	English
Roxbury	Horses	290	580						
	Cattle	471	707						
	Oxen	216	324						
	Goats/Sheep	185	37						
	Total		1648	898	410	317	98.60%	9	English
							5	Salt	
Sudbury	Horses	235	470						
	Cattle	1001	1501						
	Oxen	472	708						
	Goats/Sheep	1003	201						
	Total		2880	583	2043		91.20%	9	English

Town	Animals	Number	Tons of Hay needed*	Tons of Hay harvested			Hay harvested / hay needed	Hay Quota for Army	
				English	Meadow	Salt		(Tons)	(Type)
Weston	Horses	118	236						
	Cattle	516	774						
	Oxen	194	291						
	Goats/Sheep	476	95						
	Total		1396	602	532		81.20%	3	English
Weymouth	Horses	99	198						
	Cattle	579	869						
	Oxen	93	139						
	Goats/Sheep	1078	216						
	Total		1422	477	275	171	64.90%	2	English
Woburn	Horses	208	416						
	Cattle	752	1128						
	Oxen	318	477						
	Goats/Sheep	623	125						
	Totals		2146	566	930		69.70%	5	English

* Consumption figures based on 1840 Maine debt law.

1 horse = 2 tons; 1 cattle = 1.5 tons; 1 ox = 1.5 tons; 1 goat or sheep = 0.2 tons

Source: Merchant, *Ecological Revolutions* (1989), pp. 179-81.