Native Practices and Archaeology – Incomplete Notes and Quotes[1]

Richardson, J. B. 2006. Looking in the Right Places: Maritime Adaptations in Northeastern North America and the Central Andes. In L. Rankin & P. Ramsden (Eds.), *From the Arctic to Avalon: Papers in Honor of Jim Tuck* pp. 83-98). BAR International Series.

Jim Richardson, former student of Ritchie and long-time seasonal resident of the Vineyard offers a perspective on Richie's book and interpretations in his looking in the right places. Maritime adaptations in Northeastern North America and the Central Andes. Among other features, Richie (1) uses molluses as evidence for progressive adaption by New England Indians over time, as they shift from easily gathered shallow water quahogs to burrowing soft shell clams, then mobile scallops and finally focus on fish and mammals; (2) alludes only incidentally to changing sea level or island formation and provides no sea level data or reference regarding his sites; this is attributed to the fact that Ritchie's evidence came from the Late Archaic or younger: (3) came to the conclusion that maritime adaptations came late to Indian societies as there were no coastal sites known, from Florida to Labrador, older than 5000 BP.

Richardson underscores the major advances that came to oceanography and geology and associated fields like archaeology and ecology with the advent of plate tectonics and the scale of possible earth movement. This led to the first discussion on submerged prehistoric sites and the recognition that it is "completely possible that whole segments of coastal prehistory lie hidden under shall coastal waters" (Salwen 1962).

Richardson attributes the low density of early sites not to a lack of adaption but rather the lack of resources and low carrying capacity of the environment and the fact that the Vineyard was only a bump visited sporadically on a vast continual shelf.

Once evidence was uncovered, off shore and on land it became clear that "the maritime way of life was established as early as people inhabited the Western Hemisphere." Richardson cites fields of shellfish in the Lower Hudson by 7000 BP. Deer Island oyster middens studied by his longtime friend Jim Turk (1991) dating to approximately 6100 BP, shell mounds in the Gulf of Mexico from 8000 BP, and evidence at Monte Verde for coastal resource use between 11,000 to 12,500 BP. "There is now no doubt that as soon as the first intrepid Ice Age hunter-gatherers entered the Western Hemisphere they took advantage of the bounty of ocean resources." The extent of drowned sites and changed environments he captures by listing the many large mammals found on the submerged continental shelf – mammoths, mastodon, walrus, musk ox, giant moose, horse, giant sloth and tapir.

Second Endnote:

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[1] Additional resources located in the HF Archives.

Note: There is overlap with the Notes & Quotes on Native Use of Fire

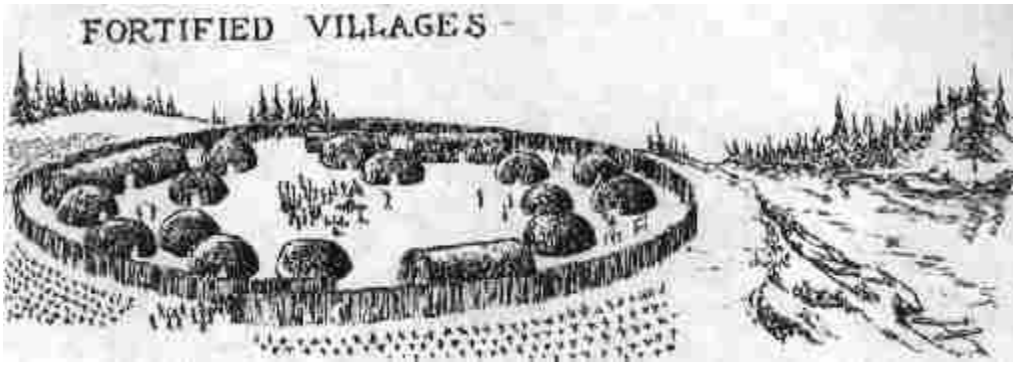
* Richardson underscores how dramatically local coastal environments could be altered by changes in the Gulf Stream, rising sea levels, the changing configuration of coastal land forms and the shifting coastal currents. He references Sawyer's (1975) reconstruction of Coastal Maine where prior to 3500 BP swordfish, deep water cod and clams were abundant. However, as sea level rose the tidal amplitude increased along with upwelling that led to an incursion of colder water such that the swordfish and quahogs disappeared.

Notes From Many Sources

Connecticut – Connecticut River

1614: "Next, on the same south coast, succeeds a river named by our countrymen Fresh River, which is shallow at its mouth ... . In some places it is very shallow, so that at about fifteen leagues [between 30-60 miles] up the river there is not much more than five feet of water. There are few inhabitants near the mouth of the river, but at the distance of fifteen leagues above they become more numerous ... . The natives there [South Windsor] plant maize, and in the year 1614 they had a village resembling a fort for protection against the attacks of their enemies. ... The river is not navigable with yachts for more than two leagues farther, as it is very shallow and has a rocky bottom. ... This river has always a downward current so that no assistance is derived from it in going up, but a favorable wind is necessary." (Adriaen Block, in http://www.colonialwarsct.org/1614.htm)

In 1614, Adriaen Block sailed up the river called the Quinni-tukq-ut or Quoneh-tacut, meaning long tidal river, by the Indians living along its banks. Block reported his impressions of the river. The villages he saw may have looked much like this:



Approximately 8,000 Indians lived along the river from its mouth up through Massachusetts. They lived in areas that had been cleared and cultivated for generations and were situated at favorable spots along the river. [Source??? This is a lot like the Pequot Fort]

Connecticut – General

New York

1628: "Between the Hamels-Hoofden the width is about a cannon's shot of 2000; the depth 10, 11, 12 fathoms. They are tolerably high points, and well-wooded. The west point is an island, inhabited by from eighty to ninety savages, who support themselves by planting maize. The east point is a very large island, full 24 leagues long, stretching east to south and east-southeast along the sea-coast, from the river to the east end of the Fisher's Hook. In some places it is from three to four leagues broad, and it has several creeks and bays, where many savages dwell, who support themselves by planting maize and making sewam and who are called Siwanoys and Shinnecocks. It is also full of oaks, elms, walnut, and fir trees, also wild cedar and chestnut trees. The tribes are held in subjection by, and are tributary to, the Pyquans, hereafter named. The land is in many places good, and fit for plowing and sowing. It has many fine valleys, where there is good grass.

New York: Long Island

To say something of the Indians, there is now but few upon the Island, and those few no ways hurtful but rather serviceable to the English, and it is to be admired, how strangely they have decreast by the Hand of God, since the English first setling of those parts; for since my time, where there were six towns, they are reduced to two small Villages, and it hath been generally observed, that where the English come to setle, a Divine Hand makes way for them, by removing or cutting off the Indians, either by Wars one with the other, or by some raging mortal Disease.

They live principally by Hunting, Fowling, and Fishing: their Wives being the Husbandmen to till the Land, and plant their corn. The meat they live most upon is Fish, Fowl, and Venison; they eat likewise Polecats, Skunks, Racoon, Possum, Turtles, and the like.

They build small moveable Tents, which they remove two or three times a year, having their principal quarters where they plant their Corn: their Hunting quarters, and their Fishing quarters:

(Daniel Denton, Brief Description of NY (1670), http://www.dentongenealogy.org/Brief%20Description%20of%20New%20York.htm

1672: On Long Island the cessation of Indian-set fires and the regrowth of the underwood prompted the Governor to order every inhabitant in 1672 to turn out for four days of brush cutting.'' (Wood in Whitney, 1994 in Motzkin and Foster 2002).

1687: Hempstead – "having a plain of upwards of 40000 acres of good pasture without a stick on it as for its value I believe Judge Palmer would think himself obliged to anyone that would give him L200 for it."(Gov. Dongan in O'Callaghan, 1850, in Motzkin and Foster 2002).

1744: Hempstead – "At four o' clock, going across this great plain, we could see almost as good a horizon around us as when one is at sea, and in some places of the plain, the latitude might be taken by observation at noonday. It is about sixteen miles long. The ground is hard and gravelly, the road very smooth but indistinct, and intersected by several roads,

which make it difficult for the stranger to find the way. There is nothing but long grass upon this plain, only in some particular spots small oak brush, not a foot high. Near Hampstead there are several pretty winding brooks that run thro' this plain…Just after we came out of the plains and sunk into the woods…' (Dr. Alexander Hamilton in Neidich, 1980 in Motzkin and Foster 2002).

"All the people here are very fond of tilling the soil, and store Indian corn for the winter, which they preserve in the following way: they make trenches on the hillsides in the sand, five or six feet, more or less, deep; put their corn and other grains in big sacks made of grass, and throw them into these trenches and cover them with sand three or four feet above the surface of the earth. They take from their store at need" (Champlain (1906:126).

Hart, J. P. and C.B. Rieth. 2002. Northeast Subsistence-Settlement Change
A.D. 700-1300. *New York State Museum Bulletin 496*, Albany, NY.

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"There food is pulse [edible seeds], as with the other tribes, which is here better than elsewhere, and more carefully cultivated; in the time of sowing they are governed by the moon, the sprouting of grain, and many other ancient usages. They live by hunting and fishing, and they are long-lived. If they fall sick, they cure themselves without medicine, by the heat of the fire, and their death at last comes from extreme old age". Page 23

"But we had scarce been an hour together, but Samoset came again, and Squanto, the only native of Patuxet, where we now inhabit, who was one of the twenty captives that by Hunt were carried away, and had been in England and dwelt in Cornhill with Master John Slanie, a merchant, and could speak little English with three others; . . ."" Page 39

Karr, R. D. 1999. *Indian New England 1534-1674. A Compendium of Eyewitness*
Accounts of Native American Life. Branch Line Press, Pepperell, MA.

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"the animals, which are in great numbers, as stags, deer, lynxes, and many other species, are taken by snares, and by bows, the latter being their chief implement; their arrows are wrought with great beauty, and for the heads of them, they use emery [flint?], jasper, hard marble, and other sharp stones in place of iron" (Cogswell, 1841, p. 48).

"They also use the same kind of sharp stones in cutting down trees, and with them construct their boats of single logs, hollowed out with admirable skill, and sufficiently commodious to contain ten or twelve persons; their oars are short, and broad at the end and are managed by rowing by force of the arms alone, with perfect security, and as nimbly as they choose" (Cogswell, 1841, p. 48).

"To hollow out their boats they burn out as much of a log as is requisite, and also from the prow and stern to make them float well on the sea" *(ibid.,* p. 45).

Ritchie, W. A. 1969. *The archaeology of Martha's Vineyard*. The Natural History Press.
New York. Introduction, 5-7.

Cheever, G. B. 1848. *The Journal of the Pilgrims at Plymouth, in New England, in 1620*.
John Wiley, New York.

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"In wintertime they have all manner of fowls of the water and of the land, and the beasts of the land and water, pond-fish, with catharres and other roots, Indian beans and clams. In the summer they have all manner of shellfish, with all sorts of berries." Woods (1977 [1634:86])

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"Like English society, native cultures were undergoing dramatic change at the time when the two spheres began to interact. Until recently Scholars have believed that the changes reported by contemporaries and confirmed by the archaeological record were the result of the coming of European trade followed by settlement. Certainly the Americans, presented with the effects of European intrusion across a huge range of experiences, were developing new patterns in response to those challenges. In North America these effects had been going on for almost a century by the time sustained colonies were founded, so most of our accounts describe people whose entire lives had been lived in the changing environment. Hundreds of fishing and trading voyages, which have left only ghostly trails, had already introduced Americans to European ways and products. By the middle of the sixteenth century several hundred ships a year went to the Newfoundland Banks for the rich summer fishing and some ventured down the New England coast. Many shipwrecked or simply jettisoned Europeans must be added to the famous Lost Colonists of Roanoke, left in 1587, so that hundreds must have joined Indian societies all along the coast. The first Roanoke venturers were actually told of two shipwrecks that had happened decades earlier. Every so often an early explorer, thinking he was in uncharted territory, was startled to see Indians wearing European shirts or hats, or using a shirt as a makeshift sail for their canoe as Archer and Brereton were in their first encounter off the Maine coast with Indians skillfully sailing "a Baske-shallop", a large sailing boat obtained from Basque fishermen in Newfoundland or Cape Breton. And imagine the response of the Pilgrims when Samoset, the first Indian they saw up close, began his speech by saying, 'Welcome'.
Page 34.

Kuppermann, K. O. 2000*. Indians &English, Facing Off in Early America*, Cornell University
Press, Ithaca, N.Y.

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THE CONTRYSIDE—Thomas Morton, the happy-go-lucky trader of Merry Mount, Massachusetts knew his Algonquin neighbors well. In the 1620's he observed:

"The Salvages are accustomed to set fire of the Country in all places where they come, and to burn it twice a yeare, viz: at the Spring, and in the fall of the leafe. The reason that moves them to doe so, is because it would other wise be so overgrown with under weeds that it would be all a coppice wood, and the people would not be able in any wise to passe through the Country out of a beaten path… the burning of the grasse destroyes the underwoods, and so scorcheth the elder trees that it shrinks them and hinders their growth very much: so that hee that will looke to finde large trees and good tymber must not depend upon the help of a wooden prospect to find them on the upland ground, but must seeke for them (as I and others have done) in the lower grounds, where the grounds are wett….. for the Salvages, by this custome of theirs, have spoiled all the rest: for this custome hath bee continued from the beginning… And this custome of firing the country is the meanes to make it passable; and by that means the trees growe here and, there as in our parks: and makes the Country very beautiful land commodious." Pg. 47.

Wilbur, C. K. 1996. *The New England Indians*, Illustrated Living History Series, The Globe Pequot Press, Guilford, CT.

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"It seems that there is no evidence in the early authorities for the wholesale annual conflagration of southern New England which Raup found unacceptable but only burning 'in those places where the *Indians* inhabit' (Wood 1865) and outside of swamps".

Day, G. M. 1998. Chapter 1. The Indian as an Eclogical Factor in the Northeastern Forest. Pg. 40 *In Search of New England's Native Past: Selected Essays by Gordon M. Day*. Foster, M. K. and Cowan W. (Eds). University of Massachusetts Press, Amherst, MA.

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"Evaluating the Influence of Indian Activities

We must conclude from the foregoing that the Indians of the Northeast cleared land for villages and fields, cut fuelwood and set fires beyond these clearings, exercised a wide indirect influence on vegetation through their hunting, and may have favored or even transplanted food and medicinal plants. These facts alone, however, are not very helpful in evaluating the extent and intensity of Indian influence in the Northeast or in reconstructing the history of a particular area. One needs rather full knowledge of four other factors which will be merely outlined in this paper—the duration of Indian occupation, the

population density, population concentration and movements, and the local pattern of settlement or preferably the location of all village sites."

Day, G. M. 1998. Chapter 1. The Indian as an Eclogical Factor in the Northeastern Forest. Pg. 44 *In Search of New England's Native Past: Selected Essays by Gordon M. Day*. Foster, M. K. and Cowan W. (Eds). University of Massachusetts Press, Amherst, MA.

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"Summary

The northeastern United States was occupied from remote times by an Indian population whose size has not been—and perhaps can never be—determined accurately. Most of this population lived in villages. These Indians created sizeable clearings for their villages and fields and probably expanded the clearings as they foraged incessantly for firewood and other necessary materials. Over much of the region, they set fire to the woods to improve traveling and visibility; to drive or enclose game; and to destroy 'vermin.' They probably exercised some influence on the forest through their control over the animals they hunted and through planting food and medicinal plants. It is certain that their activities destroyed the forest in some places, and it is hardly doubted that they modified it over much larger areas. Seasonal migrations and the periodic relocating of villages widened the range of Indian influence, which extended into unexpected localities and supposedly uninhabited regions.

We must conclude that an area which was wooded when first seen by white men was not necessarily primeval; that an area for which there is no record of cutting is not necessarily virgin; and that a knowledge of local archeology and history should be part of the ecologist s equipment."

Day, G. M. 1998. Chapter 1. The Indian as an Eclogical Factor in the Northeastern Forest. Pg. 47 *In Search of New England's Native Past: Selected Essays by Gordon M. Day*. Foster, M. K. and Cowan W. (Eds). University of Massachusetts Press, Amherst, MA.

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"In approaching the history of English-Indian contacts in New England, we are faced with the fact that contact commenced long before significant records were made. For the casual reader, the history of New England began in 1620 with the landing of the Pilgrims on Plymouth Rock, yet he is confronted with the anomaly of Samoset's greeting, 'Welcome, Englishmen.' We may search hopefully in the relations of the voyage of 1602 (Archer 1843; Brereton 1843), but our quest for the precontact Indian is hardly satisfied by the Indians who met Captain Gosnold then at Cape Neddick, clad in European clothes and rowing 'in a Baskeshallop,' or by the Cuttyhunk natives who tossed off in English such phrases as 'How now are you so saucie with my Tabacco?'"

Day, G. M. 1998. Chapter 5. English-Indian Contacts in New England. Pp 65 *In Search of New England's Native Past: Selected Essays by Gordon M. Day*. Foster, M. K. and Cowan W. (Eds). University of Massachusetts Press, Amherst, MA.

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"This practice commenced as early as 1501 with the kidnapping of Newfoundland Indians by the Portuguese (Harrisse 1892:63), and when we read that even these Indians possessed silver discs and a sword, both of Italian origin (Harrisse 1892:73), our hope of finding northeastern Indians who were completely unaffected by European trade goods diminished.

"…….but an awareness of the sixteenth century prevents us from assuming that a particular cultural trait was a native trait merely because it was observed by an explorer in the early seventeenth century."

Day, G. M. 1998. Chapter 5. English-Indian Contacts in New England. Pp 66 *In Search of New England's Native Past: Selected Essays by Gordon M. Day*. Foster, M. K. and Cowan W. (Eds). University of Massachusetts Press, Amherst, MA.

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"For long stretches of coastline, maize horticulture may not have been, in fact, a particularly viable subsistence strategy. However, the people living near the mouths of major rivers had more options. Rather than being restricted to either a coastal or an inland subsistence regime, the inhabitants of areas such as the lower Housatonic River valley enjoyed the best of both settings, with easy access to both marine resources and produce from gardens in the fertile river floodplain." Pg. 96.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"In recent years, several researchers have reviewed the evidence for prehistoric agriculture (primarily maize) on the coast of Southern New England and New York (Bendremer 1993, this volume; Bendremer and Dewar 1994; Bernstein 1992; Ceci 1990; George and Bendremer 1995; McBride and Dewar 1987) and elsewhere in the Northeast (Demerit 1991; Heckenberger et al. 1992). In this discussion, consistently the most interesting question has been whether or not coastal Algonquins were raising and consuming maize in significant quantities prior to the initial European arrival, usually placed at A.D. 1524. For now, the archaeological evidence suggests that the answer to this question is no." Pg. 111.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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*"*The archaeological evidence is consistent with historic accounts of Native American plant consumption in that both sets of data emphasize the broad range of species that were exploited for food. The historic documents indicate that no less than two dozen genera of non-domesticated plants were regularly used, and that some of the plants were of great importance in the early years of contact (Denton 1845; Gookin 1792 [1674]; Johnson 1959 [1654]; Josselyn 1988 [1674]; Van der Donck 1968 [1656]; Williams 1827 [1643]; Wood 1977 [1634]). Among the more important plants during this period were nuts (hickory, chestnut, walnut, and acorn) and fruits (e.g., plums, strawberries, raspberries, blackberries, blueberries, and grapes). Roots and tubers are also discussed in the historical sources (e.g., groundnut [*Apios americana*] and Jerusalem artichoke [*Helianthus tuberosus*] (Strong 1997; Warner 1972)." Pg. 114.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"For decades, it has been assumed that sometime after A.D. 1000 the inhabitants of the coast became actively involved in raising tropical cultigens, especially maize (Ritchie 1969; Salwen 1975; Smith 1950; Snow 1980). This belief has a long history, despite the relative lack of direct evidence for agriculture from coastal archaeological sites. With the accumulation of new data on late prehistoric subsistence patterns from both interior and coastal New England and New York, a different pattern is emerging.")." Pg. 114.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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*"*it now seems that plant domestication, especially that involving tropical species, was a much more important enterprise in the interior river valleys of the Northeast than it was along the coast. Further, it appears that the growing of maize was a late development on the coast, and one which probably had a negligible impact on overall life ways (Bendremer et al. 1991; Bragdon 1996; Ceci 1990; McBride and Dewar 1987). The limited work that has been done on reconstructing diet with carbon and nitrogen stable isotope analyses has also indicated that maize had a limited, if any, role in the prehistoric diet.")." Pg. 114.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"This is not to say that maize was not grown and consumed on the coast—it surely was—only that it was probably not a central feature of the coastal economy. Quite possibly, its symbolic and social importance outweighed its dietary significance. Even after the introduction of maize, coastal societies continued to exploit a broad range of resources, as they had done for thousands of years." Pg. 114.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"For millennia, coastal economies seem to have been relatively stable. Diversification in the use of resources was emphasized, and long-established patterns were seemingly not interrupted by developments occurring to the west." Pg. 115.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"Late Woodland food production was a very minor part of a subsistence strategy best described as a broad-based hunting and gathering subsistence system emphasizing marine and estuary resources (Bendremer 1993; Bernstein 1992b). There certainly is no evidence in the archaeological record of the kind of reliance upon horticulture recorded by early European explorers and colonists,…." Pg. 134.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"I have always translated this as a need for larger scale regional studies which, by virtue of their wider scope, can detect and assess the full range of strategies heretofore overlooked in the archaeological record. Conversely, Feder (personal communication 1997) has speculated, 'Actually, what we need are more small-scale studies, i.e., we should be looking at smaller scales to identify the settlement-subsistence systems within subregions and then compare them to other subregions ... What we need is more communication among those

working in these different subregions.' Either of these approaches will provide better resolution in archaeological investigations of subregional settlement and subsistence systems despite the time and resource problems inherent in implementing large-scale projects and difficulties in improving communications between those engaged in smaller-scale projects." Pg. 134.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"Based upon evidence, it seems clear that maize horticulture and other subsistence activities practiced at seasonal Late Woodland inland riverine sites were different than the subsistence activities at larger, more sedentary coastal sites." ." Pg. 137.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"**Hunting**
Of all the faunal remains present in archaeological sites of Connecticut, the most ubiquitous is *Odocoileus virginianus* or white-tailed deer (McBride 1984; Williams 1972; Banks et. al. 1988)." Pg. 138.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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<u>"Conclusion</u>

Late Woodland food-production strategies varied considerably across Southern New England. In coastal areas, larger sedentary villages were sustained with local marine and estuary resources and little apparent reliance upon maize horticulture. In these areas, a broad variety of wild plant and animal resources were exploited. Shellfish-collecting was an important women's activity in coastal regions, providing a reliable food source unavailable in inland areas, and may have presented a scheduling conflict with maize horticulture. By the Final Woodland period (ca. A.D. 1500-1600), more intensive maize horticulture was adopted by coastal groups. It was also at this time that more globular, collared pottery styles were adopted, which was much later than their introduction in the

middle Connecticut River valley (Lavin 1988a; Lavin et al. 1992-93). These changes occurred near the time of European contact but were not necessarily a result of contact.

Maize horticulture was a notable component of the Late Woodland subsistence system in inland riverine zones. Large storage features, containing significant quantities and several types of cultigens, have been discovered in sites located on, or near, the large alluvial floodplains of the middle Connecticut River valley and other river systems. Globular, collared pottery also occurred here earlier. These sites appear to have been only three-season, semi-permanent hamlets, which in some ways resemble settlement patterns observed elsewhere (see Hart and Asch Sidell 1996). Winter sites are located in higher, more sheltered locations. Temporary and task-specific sites, associated with the exploitation of upland resources, are located as far as 28 km from the Connecticut River. Permanent, fortified villages along the Connecticut River appeared during the Final Woodland, while maize horticulture further intensified.

Apart from the two patterns described above, there is an independent, upland, hunter-gatherer subsistence and settlement system in eastern Connecticut with no evidence of maize horticulture (Bendremer 1993). These Late Woodland settlement and subsistence systems roughly correspond to the historic territories of the Connecticut tribes such as the Nipmunks, Pequots and Mohegans, Podunk, and other river tribes, and the Manessis. Pre-contact settlement and subsistence systems, as parts of indigenous political/social systems and situated in varying environments, exhibit an appreciable degree of continuity from the Late Woodland through the early Colonial period.

More details about subregional variation in subsistence and settlement systems will certainly come to light with further research. It is particularly important that we devise methods to assess subsistence strategies and add to the superficial database we now possess. In addition, archaeologists must realize that they can no longer paint native New England societies of the past with such broad brush strokes. Contemporaneous subsistence systems can, even in a relatively small region, be quite different from each other. These systems can also change significantly in relatively short periods of time. Only from careful, regional analyses can such complex and varied patterns be fully recognized. Pg. 148-149.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"Seventeenth-century accounts of the native New England diet belie claims of maize specialization, and it is likely that the hunting and gathering of a variety of plants and animals formed the core of the diet of aboriginal; peoples." Pg. 161.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"Their Diet is Fish and Fowl, Bear, Wildcat, Ratton and Deer; dryed Oysters, *Lobsters* rosted or dryed in the smoak, *Lampres* and dry'd *Moose*-tongues, which they esteem a dish for a *Sagamor*; hard egges … their *Indian* Corn and Kidney beans they boil … they feed likewise upon earth-nuts or ground-nuts, roots of water-Lillies, Ches-nuts, and divers sorts of Berries [emphasis in original; Josselyn 1988 (1674):93)." Pg. 161.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"There is little evidence for settled village life in the interior of New England, prior to European contact." Pg. 163.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"The relative invisibility of Late Woodland villages in New England may also be due to a high degree of mobility for the small groups that reside in the region (Ritchie 1958:108). Pg. 163.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"While settlement pattern data are not plentiful in New England, especially in the interior, it is clear that the large, semi-permanent settlements characteristic of the Late Woodland period elsewhere in the deciduous Woodlands are lacking." Pg. 163.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"In fact, instead of looking for evidence to support models, I suggest that archaeologists in New England adopt a more scientific, hypothesis-testing approach. I suggest that the most reasonable hypothesis at present is that maize was only one part of a diverse subsistence-settlement system of the New England interior. Evidence that could be used to test, and potentially refute, this hypothesis includes, but is not limited to, the following: (1) evidence for year-round villages, (2) stable isotope analysis of human remains indicating a heavy reliance on maize, and (3) osteological analysis indicating a significant change in diet and living conditions associated with intensive maize horticulture." Pg. 171.

Hart, J. P.(Ed.) 1999. *Current Northeast Paleothnobotany*. New York State Museum Bulletin 494. The University of the State of New York, Albany, NY.

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"What these results indicate is that Native Americans in New York were growing agricultural crops much earlier than previously thought. The results also mean that these two crops were present in the state for many centuries before agriculture became a mainstay of many Native American diets. There was, in fact, no immediate transformation in people's diets after the adoption of agriculture. Rather, these two crops were simply incorporated into existing diets.

In other words, the Three Sisters crops—maize, bean, and squash—did not exist in New York as a group until about 300 years before Henry Hudson sailed up the Hudson River."

Hart, J. P. 2008. Separating the three sisters*. Legacy.* The Magazine of the State Museum of New York 4:10-12*.*

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"At least 11,000 years ago, an invasive species, Homo sapiens, arrived in North America and the consensus is that their hunting may have contributed to the extinction of most of the continent's large mammal species. One might think that for thousands of years the 'natural state' was stable up until the time of European settlement. However, change was likely continuous over this time frame. Recent research indicates that Native Americans had a substantial impact on the landscape long after the large mammals went extinct and well before the Europeans arrived.

In New England it appears that forests were regularly burned by native peoples in order to clear the understory, thus making their bow hunting easier. Along the coastline, forests were burned to create grassland, so that its associated game species could thrive. Although this human-altered landscape was certainly more 'natural' than what happened to the area after it was colonized by Europeans, one can debate if this prehistoric time span is the 'ideal' conservation *target."* Pg. 3.

Connecticut Audubon Society. 2010. Connecticut State of the Birds Report. Citizen Scientists Contribute to Conservation. Fairfield, CT. www.ctaudubon.org/SOTB/index.html.

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"Miantenomie's speech to the Indians on eastern Long Island, perhaps in 1642 (Anon.1833:162), reveals the extent of the subsistence problem:

> Our fathers had plenty of deer and skins, our plains were full of deer, as also our woods, and of turkies, and our coves full of fish and fowl. But these English have gotten our land, they with scythes cut down the grass, and with axes fell the trees; their cows and horses eat the grass, and their hogs spoil our clam banks, and we shall all be starved;...
>
> [The Indians of southern New England and Long Island should unite to kill the English] but no cows, for they will serve to eat till our deer be increased again (in Gardner 1833: 154-155)." Pg 60.

Ceci, L. 1990. *The Effect of European Contact and Trace on the Settlement Pattern of Indians in Coastal New York, 1524-1665.* Garland Publishing, Inc., New York.

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"Several seventeenth century observers described the camp settlement for Indians in Coastal New York:

> They had no houses, but slept under the blue heavens, some on mats of bulrushes interwoven, and some on the leaves of trees (Hudson, quoted by DeLaet in Jameson 1909:48).
>
> Some of them lead a wandering life in the open air with no settled habitations; lying stretched upon the ground or on mats made of bulrushes, they take both their sleep and food, especially in summer, when they go nearer to the sea for the sake of fishing (DeLaet, in Jameson 1909:57).
>
> They also frequently have villages near the water sides, at fishing places, where they plant some vegetables; but they leave those places every year on the approach of winter, and retire to their strong places, or into the thick woods, and where fuel is plenty, and where there is game and venison . . . Sometimes towards the spring of the year, they come in multitudes to the sea shores and bays, to take oysters, clams, and every kind of shell-fish... (Van der Donck 1968:81-82).
>
> As to their way of living, its very rudely and rovingly, shifting from place to place, according to their exigencies, and gains of fishing and fowling and hunting, never

confining their rambling humors to any settled Mansions (Wolley 1701:58)." Pg. 67 & 68

Ceci, L. 1990. *The Effect of European Contact and Trace on the Settlement Pattern of Indians in Coastal New York, 1524-1665.* Garland Publishing, Inc., New York.

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"Maize was apparently grown by Indians in a few locations after European contact and year-round habitation sites were established, but harvests must have been small and inadequate for larger, sedentary populations, providing little more than incidental supplements to the diet. Yields in any one location would have been short-lived in the absence of refertilization by either a natural or human agent. As the numbers and sizes of ears and kernels decreased, Indian cultivators would have been forced to frequently seek new locations for their gardens." Pg. 133.

Ceci, L. 1990. *The Effect of European Contact and Trace on the Settlement Pattern of Indians in Coastal New York, 1524-1665.* Garland Publishing, Inc., New York.

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"In sum, documents and maps give evidence for the growth and intensification of trade in Coastal New York between 1524 and 1624. This economic development, I propose, brought significant changes to local Indians, changes that include those also suggested by the archeological evidence for sites occupied after contact had occurred. Indians began to remain in coastal villages throughout the year to produce the newly valuable little shell beads and trade with the Europeans for new goods." Pg. 90.

Ceci, L. 1990. *The Effect of European Contact and Trace on the Settlement Pattern of Indians in Coastal New York, 1524-1665.* Garland Publishing, Inc., New York.

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Verrazano acct. 1524 "When we went farther inland we saw their houses, which are circular in shape, about xiiii to xv paces across, made of bent saplings; they are arranged without any architectural pattern, and are covered with cleverly worked mats of straw which protect them from wind and rain . . . They move these houses from one place to another according to the richness of the site and the season. They need only carry the straw mats, and so they have new houses made in no time at all. In each house there lives a father with a very large family, for in some we saw xxv to xxx people. They live on the same food as the other people—pulse (which they produce with more systematic cultivation than the other tribes, and when sowing they observe the influence of the moon, the rising of the Pleiades . . .), and otherwise on game and fish (Wroth 1970:139). Pg. 141.

Ceci, L. 1990. *The Effect of European Contact and Trace on the Settlement Pattern of Indians in Coastal New York, 1524-1665.* Garland Publishing, Inc., New York.

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"Events of this period in New England can only be understood in the context of the New York background just summarized. This is partly because outside influences on New England came largely by way of New York from this time on. Unfortunately, it is also partly because the archaeology of this period of New England prehistory is as yet only poorly developed." Page 276

Snow, D. R. 1980. *The Archaeology of New England*. Academic Press, New York.

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"the Northeast has traditionally been considered a marginal, culturally retarded outlier of the eastern United States. The result has been a consistent bias in summaries of Eastern prehistory, where Northeastern culture history is given short shrift, rarely being referred to except for passing mention of Paleo-Indian and Archaic sites and the Iroquois. . . . There have been few attempts to appreciate and justify the unique qualities of Northeastern prehistory."

Dincauze, D. F. 1993. Centering. Northeast Anthropology 46:33-37.

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"In New England, all the considerable fieldwork since the middle of this century has failed to replicate the early discovery of "villages" (e.g., Thorbahn 1988). Gradually, New England archaeologists are convincing themselves that there are no villages, in the usual sense, to be found."

Dincauze, D. F. 1993. Centering. Northeast Anthropology 46:33-37.

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"The large sites that had entered the regional literature and oral tradition as "village" sites are shown to have accumulated over centuries of short-term use and reuse. Not only were there no villages in prehistory, there were apparently no villages in the early historic period either**."**

Dincauze, D. F. 1993. Centering. Northeast Anthropology 46:33-37.

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“For the casual reader, the history of New England began in 1620 with the landing of the Pilgrims on Plymouth Rock, yet he is confronted with the anomaly of Samoset's greeting, ‘Welcome, Englishmen.’ We may search hopefully in the relations of the voyage of 1602, but our quest for the pre-contact Indian is hardly satisfied by the Indians who met Captain Gosnold then at Cape Neddick, clad in European clothes and rowing”. . . in a Baske shallop," or by the Cuttyhunk natives who tossed off in English such phrases as, ‘How now are you so saucie with my Tabacco?’”

Day, G. M. 1961. “English-Indian Contacts in New England.” *In: Proceedings of the 9th annual meeting of the American Indian Ethnohistoric Conference*, Brown University, October 1961.

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“an awareness of the 16th century prevent us from assuming that a particular cultural trait was a native trait merely because it was observed by an explorer in the early 17th century.”

Day, G. M. 1961. “English-Indian Contacts in New England.” *In: Proceedings of the 9th annual meeting of the American Indian Ethnohistoric Conference*, Brown University, October 1961.

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*“*Many Iroquoian villages after A.D.1200 were palisaded for defense, and there is ample evidence during the Late Woodland period for inter-tribal warfare (Snow 1994). Evidence for warfare is not surprising given the evidence for sedentism and intensive horticulture: when one examines the big picture of human history and cultural evolution, it is only when people become dependent on few resources that they are willing - even forced - to compete, sometimes violently, for access to the resources and the land that produces these resources.”

Chilton, E. S. 2004. Social Complexity in New England: AD 1000-1600*. In North America Archaeology,* edited by Timothy Pauketat and Diana Loren, pp. 138-160. Blackwell Press, Studies in Global Archaeology Series.

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“there is no evidence for warfare prior to European colonization in New England.”

Chilton, E. S. 2004. Social Complexity in New England: AD 1000-1600*. In North America Archaeology,* edited by Timothy Pauketat and Diana Loren, pp. 138-160. Blackwell Press, Studies in Global Archaeology Series.

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*"*In the 1970s, when I attended high school, a popular history text was *America: Its People and Values*, by Leonard C. Wood, Ralph H. Gabriel, and Edward L. Biller. Nestled among colorful illustrations of colonial life was a succinct explanation of Tisquantum's role:

> A friendly Indian named Squanto helped the colonists. He showed them how to plant corn and how to live on the edge of the wilderness. A soldier, Captain Miles Standish, taught the Pilgrims how to defend themselves against unfriendly Indians."

Mann, C. C. 2006. *1491 New Revelations of the Americas before Columbus.* Vintage Books, New York, NY.

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"American landscapes after 1492 were emptied—'widowed,' in the historian Francis Jennings's term. Suddenly, deregulated, ecosystems shook and sloshed like a cup of tea in an earthquake. Not only did invading endive and rats beset them, but native species, too, burst and blasted, freed from constraints by the disappearance of Native Americans. The forest that the first New England colonists thought was primeval and enduring was actually in the midst of violent change and demographic collapse. So catastrophic and irrevocable were the changes that it is tempting to think that almost nothing survived from the past. This is wrong: landscape and people remain, though greatly altered. And they have lessons to heed, both about the earth on which we all live, and about the mental frames we bring to it."

Mann, C. C. 2006. *1491 New Revelations of the Americas before Columbus.* Vintage Books, New York, NY.

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"passenger pigeons were not as numerous before Columbus. 'What happened was that the impact of European contact altered the ecological dynamics in such a way that the passenger pigeon took off.' The avian throngs Audubon saw were 'outbreak populations—always a symptom of an extraordinarily disrupted ecological system.'"

Mann, C. C. 2006. *1491 New Revelations of the Americas before Columbus.* Vintage Books, New York, NY.

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"Increasingly, though, archaeologists demand a caveat. The Americas seen by the first colonists *were* teeming with game, they say. But the continents had not been that way for long. Indeed, this Edenic world was largely an inadvertent European creation.

At the time of Columbus the Western Hemisphere had been thoroughly painted with the human brush. Agriculture occurred in as much as two-thirds of what is now the continental United States, with large swathes of the Southwest terraced and irrigated. Among the maize fields in the Midwest and Southeast, mounds by the thousands stippled the land. The forests of the eastern seaboard had been peeled back from the coasts, which were now lined with farms. Salmon nets stretched across almost every ocean-bound stream in the Northwest. And almost everywhere there was Indian fire."

Mann, C. C. 2006. *1491 New Revelations of the Americas before Columbus.* Vintage Books, New York, NY.

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"When disease swept Indians from the land, this entire ecological *ancien régime* collapsed."

Mann, C. C. 2006. *1491 New Revelations of the Americas before Columbus.* Vintage Books, New York, NY.

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"Nonetheless, ecologists and archaeologists increasingly agree that the destruction of Native Americans also destroyed the ecosystems they managed. Throughout the eastern forest the open, park-like landscapes observed by the first Europeans quickly filled in. Because they did not burn the land with the same skill and frequency as its previous occupants, the forests grew thicker. Left untended, maize fields filled in with weeds, then bushes and trees. My ancestor Billington's great-grandchildren may not have realized it, but the impenetrable sweep of dark forest admired by Thoreau was something that Billington never saw. Later, of course, Europeans stripped New England almost bare of trees."

Mann, C. C. 2006. *1491 New Revelations of the Americas before Columbus.* Vintage Books, New York, NY.

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"'The virgin forest was not encountered in the sixteenth and seventeenth centuries,' wrote historian Stephen Pyne, "it was invented in the late eighteenth and early nineteenth Centuries.' *Far from* pristine wilderness that is, Europeans bloodily *created* it.

By 1800 the hemisphere was thick with artificial wilderness. If 'forest primeval' means woodland unsullied by the human presence, Denevan has written, there was much more of it in the nineteenth century than in the seventeenth."

Mann, C. C. 2006. *1491 New Revelations of the Americas before Columbus.* Vintage Books, New York, NY.

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"1792 FABULOUS TRADITION

The first Indian who came to the Vineyard, was brought thither with his dog on a cake of ice. When he came to Gay Head, he found a very large man, whose name was Moshup. He had a wife and five children, four sons and one daughter; and lived in the Den. He used to catch whales, and then pluck up trees, and make a fire, and roast them. The coals of the trees, and the bones of the whales, are now to be seen. After he was tired of staying here, he told his children to go and play ball on a beach that joined Noman's Land to Gay Head. He then made a mark with his toe across the beach at each end, and so deep, that the water followed, and cut away the beach; so that his children were in fear of drowning.

He had no conversation with the Indians, but was kind to them, by sending whales, &c. ashore to them to eat. But after they grew thick around him he left them." (From Thomas Cooper as told to Benjamin Bassett - 1806). Bassett, D. B. 1806. *Fabulous Traditions and Customs of the Indians of Martha's Vineyard*. Collections of the Massachusetts Historical Society for the Year 1792. 1: 139-140.

Simmons, W. S. 1986. *Spirit of the New England Tribes, Indian History and Folklore*. University Press of New England, Hanover, NH.

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"At the time whereof I speak, the island of Nope extended to and comprehended the little island of Tuckanuck. The little island was then a part of the larger island; but once upon a time there came a great storm, the winds raged and the thunders rolled, and the storms beat upon the island, and it was disjointed and became two islands." (Jones, J. A. 1830. *Traditions of the North American Indians, Being a Second and Revised Edition of "Tales of an Indian Camp*." 3 vols. H. Colburn and R. Bentley. London).

Simmons, W. S. 1986. *Spirit of the New England Tribes, Indian History and Folklore*. University Press of New England, Hanover, NH.

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"Moshop was fond of blasted whale meat and would eat a whole whale at a meal. Standing near the entrance of his den, he could reach out over the cliffs, pick up a whale that had been washed ashore, and swing it over to his fire, which was burning continually. The blood and grease from the whales stained the cliffs. Moshop taught the people how to build their lodges; how to till the soil and to catch the whale and smaller fish that lived in the sea." (Tantaquidgeon, G. 1930b. Notes on the Gay Head Indians of Massachusetts. *Indian Notes* 7(1):1-26.)

Simmons, W. S. 1986. *Spirit of the New England Tribes, Indian History and Folklore*. University Press of New England, Hanover, NH.

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"They make themselves Forts to flie into, if the enemies should unexpectedly assaile them. These Forts some be fortie or fiftie foote square, erected of young timber trees, ten or twelve foot high, rammed into the ground, with undermining within, the earth being cast up for their shelter against the dischargements of their enemies, having loopholes to send out their winged messengers, which often deliver their sharp and bloody embassies in the tawnie sides of their naked assailants, who wanting butting Rammes and battering Ordinances to command at distance, lose their lives by their too neare approachments."

Johnson, S. F. 1995. *Ninnuock (The People) The Algonkian People of New England*. Bliss Publishing, Marlborough, MA.

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"Early explorers and settlers detailed vast fields of Indian corn, each field growing a different color of corn—yellow, red, blue, black, flesh colored, and speckled corn, each with its own special purpose, meaning, and unique properties."

Weinstein, L. 1994*. Enduring Traditions, The Native Peoples of New England*. Bergin & Garvey, Westport, CT.

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"The site borders a freshwater pond . . . rich in waterfowl and reptile life, and two tidal rivers are located less than a kilometer away. Many of the nutritionally important resources (deer and shellfish) are available most of the year. Tons of refuse . . . were excavated and almost nothing was found that is not available within a few hundred meters of the site." (ibid.) (Bernstein, D. A. 1990. Prehistoric Seasonality Studies in Coastal Southern New England. *American Anthropologist* 92:96-115).

Weinstein, L. 1994*. Enduring Traditions, The Native Peoples of New England*. Bergin & Garvey, Westport, CT.

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"One of the interesting findings about the archaeological information from sites in the Greenwich Cove area is the complete absence of beans, squash, or corn. This absence is in apparent disagreement with Narragansett oral traditions that maintain a vital role for maize agriculture during these centuries and the written record of the sixteenth and seventeenth centuries that clearly indicate corn as an important dietary staple at Narragansett Bay.

People living on Narragansett Bay were undoubtedly familiar with and probably used and consumed these domestic plants, but the archaeological evidence suggests strongly that cultigens were not a major dietary staple. Archaeological evidence of cultigens is found only at a seventeenth-century site corroborating the written record regarding the presence of cultigens at the time of European contact and settlement."

Weinstein, L. 1994. *Enduring Traditions, The Native Peoples of New England*. Bergin & Garvey, Westport, CT.

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"A surprising number of non-native people assume that native Americans in New England have either vanished or been fully assimilated into mainstream society. In fact, native people have been here for at least 12,000 years and they are still here."

Weinstein, L. 1994. *Enduring Traditions, The Native Peoples of New England*. Bergin & Garvey, Westport, CT.

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A Key into the Language of America

Roger Williams 1643

Lots of descriptions of activities related to Europeans – fighting, stealing, bartering, sickness, metal-working, trading, moving dozens of miles to trade, hunting and trapping for trade. Suspicion of English.

They have often asked mee, why wee call them Indians, Natives, £i.c. and understanding the reason, they will call themselues Indians in opposition to EngHsh Sec.

From the South west came their Corne, and Beanes out of their great God Cautantowwits field: and indeed the further Northward and Westward from us their Corne will not grow, but to the Southward better and better.

Obs: Most commonly there houses are open, their doore is a hanging Mat, which being lift up, falls downe of itselfe ; yet many of them get English boards and nailes, and make artificiall doores and bolts themselves, and others make slighter doores of Burch or Chesnut barke, which they make fast with a cord in the night time, or when they go out of town, and then the last (that makes fast) goes out at the Chimney, which is a large opening in the middle of their house, called: Wunnauchicomock, A chimney.

Obs: Many of them begin to be furnished with English chests; others, when they goe forth of towne, bring their goods (if they live neere) to the English to keepe for them, and their money they hang it about their necks, or lay it under their head when they sleepe.

Nqussutam — I remove house: Which they doe upon these occasions: From thick warme vallies, where they winter, they remove a little neerer to their Summer fields; when 'tis warme Spring, then they remove to their fields, where they plant Corne. In middle of Summer, because of the abundance of Fleas, which the dust of the house breeds, they will flie and remove on a sudden from one part of their field to a fresh place: And sometimes having fields a mile or two, or many miles asunder, when the worke of one field is over, they remove house to the other: If death fall in amongst them, they presently remove to a fresh place : If an enemie approach they remove into a Thicket, or Swampe, unlesse they have some fort to remove unto. Sometimes they remove to a hunting house in the end of the yeare, and forsake it not until Snow lie thick and then will travell home. Men, women and children, throw the snow, thirtie, yea, fiftie or sixtie miles; but their great remove is from their Summer fields to warme and thicke woodie bottomes where they winter: They are quicke; in halfe a day, yea, sometimes at fewhoures warning to begone and the house up elsewhere, especially, if they have stakes readie pitcht for their Mats. I once in travell lodged at a house, at which in my returne I hoped to have lodged againe the next night, but the house was gone in that interim, and I was glad to lodge under a tree:

Obs: The Indians having abundance of these sorts of Foule upon their waters, take great paines to kill any of them with their Bow and Arrowes; and are marvellous desirous of our English Guns, powder and shot (though they are wisely and generally denied by the Enghsh) yet with those which they get from the French, and some others (Dutch and English) they kill abundance of Fowle, being naturally excel- lent marks-men;

The Indians of Martins vineyard, at my late bemg amongst them, report generally, and confidently, of some Islands, which lie off" from them to Sea, from whence every Morning early, certaine Fowles come and light amongst them, and returne at Night to lodg- ing, which Island or Islands are not yet discovered, though probably, by other Reasons they give, there is Land, &.c.

Obs: The Indians have an Art of drying their chesnuts, and so to preserve them in their barnes for a daintie all the yeare. Aji.'iUchemineash, Akornes These Akornes also they drie, and in case of want of Corne, by much boyling they make a good dish of them: yea sometimes in plentie of Corne doe they eate these Acornes for a novelty. Wussoquat, A Wallnut Tre«. Wusswaquatomineug, Wallnut. Of these Wallnuts they mafte an excellent Oyle good for many uses, but especially for their anoynt- ing of their heads. And of the chips of the Walnut Tree (the barke taken off) some English in the Countrey make excellent Beere both for Tast, strength, colour, and inoffensive opening operation: Sasaunckpamuck, The Sassafrasse Tree.

Obs: The Women set or plant, weede, and hill, and gather and barne all the corne and Fruites of the Field: yet sometimes the man himselfe, (either out of love to his Wife, or care for his Children, or being an old man) will help the Woman which (by the custome of the Countrey) they are not bound to. When a field is to be broken up, they have a very loving sociable speedy way to dispatch it: All the neighbours men and Women forty, fifty, a hundred, &.C. joyne, and come in to helpe freely. With friend- ly joyning the/ breake up

their fields, build their Forts, hunt the woods, stop and kill fish in the Rivers, it being true with them as in all the World in the Affaires of Earth or Heaven: By concord little things grow great, by discord the greatest come to nothing. Concordia, parvm res crascunty discordid viagnce dilabimtur.

The Indians bring downe all their sorts of Furs, which they take in the countrey, both to the Indians and to the English for this Indian Money: this Money the English, French and Dutch, trade to the In- dians, six hundred miles in severall parts (North and South from New-England) for their Furres, and whatsoever they stand in need of from them: as Corne, Venison, &c.

Obs: Amongst themselves they trade their Come, skins, Coates, Venison, Fish, &c. and sometimes come ten or twenty in a Company to trade amongst the English. They have some who follow onely makmg of Bowes, some Arrowes, some Dishes (and the wo- men make all their Earthen Vessells) some follow fishing, some hunting: most on the Sea side make Money, and Store up shells in Summer against Win- ter whereof to make their money.

They are marvellous subtle in their Bargaines to save a penny; And very suspicous that Enghsh Men labour to deceive them: Therefore they will beate all markets and try all places, and runne twenty, thirty, yea forty mile, and more, and lodge in the Woods to save sixpence.

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"A typical homeland would have contained one or two important settlements and meeting spots, planting fields, sacred sites such as communal cemeteries, and locations for fishing, collecting shellfish, and gathering food and other resources. Dispersed throughout the homeland area would have been 'dozens of wigwams, alone, in pairs, or clustered in small hamlets.' These homelands were not just territories that Narragansett people traveled through, settled on, and subsisted from; they were places steeped in long-term histories, enduring social relations, and sacred traditions. They were landscapes shaped by geography, history, beliefs, experience, and spirituality. As active and animated spaces, rather than simply static backdrops, homelands were important not only in sustaining the Narragansetts' daily lives but also in maintaining their social and historical identity as a people."

Rubertone, P. E. 2001. *Grave Undertakings: An Archaeology of Roger Williams and the Narragansett Indians*. Smithsonian Institution Press. Washington, DC.

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"According to archaeologists, American Indians often so pressured or depleted basic resources like land and trees that they had to switch from one type of food to another or move the locations of their villages. Native farmers throughout North America

transformed landscapes (as farmers everywhere did), not just by burning and clearing woodland for conversion to agricultural land, but through the steadily escalating demand for wood for fuel and construction matching growing populations supported by domesticated crops."

Krech, I. S. 1999. *The Ecological Indian: Myth and History*. W.W. Norton and Company, New York.

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"Where they farmed maize, beans, squash, melons, pumpkins, and other crops, Indians used fire extensively to clear land, destroy plants competing with crops, and deposit ash on soil. Throughout the East, Indians cleared hundreds and, at times, thousands of acres of ground for their crops. From New England came many reports of fields several hundred acres in extent. In Virginia, mention was made of thousands of acres of cleared land under cultivation. When Europeans arrived on the East Coast, they discovered massive quantities of maize, calculated later in hundreds of thousands of bushels, thousands of barrels, or of sufficient quantity to fill the holds of several ships or to keep people alive for months. East and west, fields and meadows in which burning ceased when they were abandoned by Indians dead from disease or driven away by their enemies again soon became forest."

Krech, I. S. 1999. *The Ecological Indian: Myth and History*. W.W. Norton and Company, New York.

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"So important was fire to the maintenance of grasslands that after Indians died from disease or abandoned them, these clearings quickly reverted to forest. Animals that had been at home there went elsewhere or their populations dwindled. One vanished entirely: The heath hen became extinct when fire was eliminated from eastern scrub oak grasslands. Eliminate fire and the change from a mixed grassland-forest habitat to forest alone could be rapid: After only two decades in Virginia, the results included trees with 'very good board timber,' as Robert Beverley, the early-eighteenth-century historian put it."

Krech, I. S. 1999. *The Ecological Indian: Myth and History*. W.W. Norton and Company, New York.

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"Around a thousand years ago, with the introduction of corn, a horticultural revolution further modified the southern New England forest. Algonkian horticulturists used fire to clear planting fields and create forest openings that attracted deer. Their frequent cool fires consumed the underbrush, but did not destroy mature trees or eliminate plant or animal species. The resulting fire-grass pastures and park like groves, according to European colonizers, made 'the country very beautiful and commodious,' so that 'scarce a bush or bramble or any cumbersome underwood' was to be seen.

The vegetable, animal, and human inhabitants of precolonial New England constituted an integrated evolving ecosystem in 1600. While horticulture predominated in the south, the northern tribes were primarily gatherer-hunter-fishers, growing some corn during favorable years."

Krech, I. S. 1999. *The Ecological Indian: Myth and History*. W.W. Norton and Company, New York.

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"Although the colonial army had cut down Indian corn and destroyed Indian food supplies whenever possible, Mrs. Rowlandson was amazed that God had not allowed one Indian to starve to death. 'I did not see (all the time I was among them) one man, woman, or child die with hunger. Though many times they would eat that, that a hog or a dog would hardly touch . . . They would pick up old bones and cut them to pieces at the joints, and if they were full of worms and maggots, they would scald them over the fire to make the vermin come out and then boil them, and drink up the liquor and then beat the ends of them in a mortar, and so eat them. They would eat horses guts, and ears, and all sorts of wild birds which they would catch: also bear, venison, beaver, tortoise, frogs, squirrels, dogs, skunks, rattle- snakes; yea the very bark of trees.' The ability of native Americans to conserve and utilize every substance provided by nature was perhaps nowhere so graphically described—nor was white repulsion at their way of life. (Rowlandson, M. 1682. "The Captivity of Mrs. Mary Rowlandson." In *Narratives of Indian Wars, 1675-1699*, edited by C. H. Lincoln, pp.109-67. Charles Schribner's Sons, NY.

Merchant, C. 1989. *Ecological Revolutions, Nature, Gender, and Science in New England*. The University of North Carolina Press, Chapel Hill, NC.

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"For the Massachusetts and Narragansett Bay Indians, the source of the gifts of corn and beans was their southwestern god Kiehtan. Roger Williams also reported the Narragansett's belief that a crow had brought a grain of corn in one ear and a bean in the other."

Merchant, C. 1989. *Ecological Revolutions, Nature, Gender, and Science in New England*. The University of North Carolina Press, Chapel Hill, NC.

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"*Female Farmers*

The southern New England tribes produced their subsistence primarily though the planting of corn, beans, and squash by women, supplemented by mail hunting and mixed-gender fishing."

Merchant, C. 1989. *Ecological Revolutions, Nature, Gender, and Science in New England*. The University of North Carolina Press, Chapel Hill, NC.

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"*The Collapse of Corn Mother Farming*

The Indian production system of horticulture, gathering, and hunting had evolved in symbiosis with local ecology."

Merchant, C. 1989. *Ecological Revolutions, Nature, Gender, and Science in New England*. The University of North Carolina Press, Chapel Hill, NC.

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"And so, too, its significance to a long sequence of American developments remains unappreciated. For in a very practical sense, one may say that every ship that sailed across the northern Atlantic in the 1600s was sustained by the experience and skills, the manpower and infrastructure, the assessments and visions developed from the routines of the Great Fishery. That is not surprising, considering that exploitation of this rich resource was one of the great economic activities of Europe during the latter sixteenth and the seventeenth centuries, an economic venture which every year lured hundreds of vessels across the ocean, drew upon and fostered seafaring support systems along much of the Atlantic fringe, and marketed its catch through a network that reached far into the European realm; thus it trained generations of mariners, employed thousands of craftsmen and suppliers, and involved families and friends, syndicates and whole communities in North American activities long before any Pilgrim or Puritan, Norman or Dutch colonist took root in American soil."

Meinig, D. W. 1986. *The Shaping of America, a Geographical Perspective on 500 Years of History, Vol. 1, Atlantic America, 1492-1800*. Yale University Press, New Haven, CT.

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"Acorns are the most important wildlife food in the deciduous forests of North America, the ecological equivalent of manna from heaven. The pattern and abundance of acorns, and of their parent trees ***(****Quercus* spp.), are of critical importance to most wildlife species that reside in the temperate forests of North America. Understanding the function and role of oaks within forested ecosystems will help natural resource managers understand the dynamics of wildlife populations."

McShea, W. J. and W. M. Healy. 2002. Chapter 1. Oaks and Acorns as a Foundation for Ecosystem Management. Pp.1-9 *In* W. J. McShea and W.

M. Healy (Eds.), *Oak Forest Ecosystems, Ecology and Management for Wildlife*. The Johns Hopkins University Press. Baltimore, MD.

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"In some locations fire frequency and oak distribution are also linked to Native American population density and land-use practices. Throughout the Holocene, Indian populations generally increased in much of the eastern United States, as did their use of fire (Pyne 1983). In addition, the native people may have locally increased the dominance of oak and other nut trees via anthropogenic fires and by caching and cultivating the seeds of these species (Delcourt et al. 1986, Delcourt 1987, Wykoff 1991). Indeed, regardless of the climate, Native American land use transformed local patches of northern hardwood-conifer or mixed-mesophytic forests into forests dominated by oak, chestnut, and hickory."

Abrams, M. C. 2002. Chapter 3. The Postglacial History of Oak Forests in Eastern North America. Pp. 34-45 *In* W. J. McShea and W. M. Healy (Eds.), *Oak Forest Ecosystems, Ecology and Management for Wildlife*. The Johns Hopkins University Press. Baltimore, MD.

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"The surprising feature of such interspecific asynchrony is that, by reducing the annual variability in total acorn abundance and the probability of total crop failures, it also facilitates the persistence of generalist species dependent on acorns."

Koenig, W. B. and J. M. H. Knops. 2002. Chapter 9. The Behavioral Ecology of Masting in Oaks. Pp. 129-148 *In* W. J. McShea and W. M. Healy (Eds.), *Oak Forest Ecosystems, Ecology and Management for Wildlife*. The Johns Hopkins University Press. Baltimore, MD.

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"When we consider that as early as 1560 more than thirty fishermen sailed from Saint-Malo and Cancale for Newfoundland and that the same number sailed next year from three minor ports of Normandy; that Parkhurst in 1578 reported 50 English, 150 French and Breton, and 100 Spanish in Newfoundland ports, exclusive of the whalers; and that Thevet puts the total number (including the Dutch, who had just got onto it) at 300 in 1586; one can appreciate that European sailing craft had become common every summer in Newfoundland and Gulf waters. A brave sight they must have been, as if a yachting regatta were on. We have no details whatsoever of these many hundreds of northern voyages, since fishermen kept no journals and published no narratives. For the most part they had no aid to navigation more modern than the compass, and performed latitude sailing by eye altitudes of sun and North Star. Even a mariner's astrolabe would have been beyond their means or skill. Thus, long before the coast-dwelling natives of Norumbega and the region between the Hudson and Florida had seen any European sail save those of an infrequent explorer, one could say of the Gulf of St. Lawrence and the outer coast of Newfoundland as

did Wordsworth of English waters in the eighteenth century: "With ships the sea was sprinkled far and nigh, like stars in Heaven."

Morison, S. E. 1971. *The European Discovery of America. The Northern Voyages A.D. 500-1600.* Oxford University Press, NY.

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“A visitor to Aquinnah in 1807 described Aquinnah as: "a tract of excellent land, containing three thousand acres, reserved to them. It is destitute of trees; but there are many swamps, some of which afford peat, and other springs of good water. The land is broken into hills; and there are no roads. The Indians have twenty-six framed houses and seven wigwams. The framed houses are nothing better than mean huts: some of them have two apartments; but the greatest part of them, not more than one. There are three barns, and two meeting houses, which are small buildings, not more than twenty feet square. The number of families is thirty-four; and of souls, a hundred and forty-two" (Freeman 1807:93) (Figure 5-2).”

Herbster, H. and S. G. Cherau. 2002. Archaeological Reconnaissance Survey Town of Aquinnah, Massachusetts. Public Archaeology Laboratory, Inc., Report 1335, Pawtucket, RI.

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“The mapped location of this site corresponds to Guernsey's "P" site, which he described as "an ancient cornfield". He noted that "The hills and rows retain their original shape, some fifty hills being counted. Several of these were opened, showing the soil to be very black and full of broken shells and splintered bones" (1915:84).”

Herbster, H. and S. G. Cherau. 2002. Archaeological Reconnaissance Survey Town of Aquinnah, Massachusetts. Public Archaeology Laboratory, Inc., Report 1335, Pawtucket, RI.

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“A large portion of the Katama Zone has been maintained as cleared land in the modern period, perhaps more than any other area in Edgartown. These open areas include active farm and pasture land, remnant/abandoned fields, and the Katama Airfield, all located on the broad, sandy outwash plain. Intensive use for agriculture has the potential to affect belowground cultural deposits, but often only in the upper levels. Given the nature of the soils in this area - deep, well drained, and rock free - there is a strong likelihood that deeply buried prehistoric resources could survive below plowed or otherwise altered topsoils. The sensitivity maps reflect this possibility, with high sensitivity near wetland resources and moderate sensitivity further inland.”

Herbster, H. and S. G. Cherau. 2000. *Archaeological reconnaissance survey-Town of Edgartown, Martha's Vineyard, MA*. PAL Report 1106. Pawtucket, RI.

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"This population distribution is taken as typical, and most assume that it has considerable time depth. In fact, this distribution represents a snapshot of Iroquois development at one point in history. Had Europeans encountered the Iroquois two hundred years earlier, not only the population distribution but the political, ethnic, and even linguistic groups they observed would have been different."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"Deer were the most important source of meat in the diet and are the predominant mammalian remain on Iroquois village sites (Socci 1995, 107)."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"Through a detailed knowledge of the plant and animal species in their environment and the skill and technology to secure these resources, generations of Native Americans maintained a balance with the environment of the Eastern Woodlands. A temporary decrease in the availability of one resource could be made up by increased reliance on other species. Rituals were observed in order to maintain the proper relationship between humans and the spiritual forces felt to govern these resources."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"Typical Iroquois villages consisted of longhouses surrounded by palisades. They are frequently located on hilltops or other defensible terrain. It is assumed that after a period of ten or more years a community moved to a new location."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"Champlain observed that the palisade around the Iroquois village he attacked in 1615 was some thirty feet high, while he estimated a triple palisade around a Huron village at thirty-five feet."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"When archaeologists look at the distribution of material on a village site, they are not seeing a picture of everyday life. Instead, what they see reflects the culmination of activity on a site, including changes since its abandonment."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"The presence of large Iroquois communities in the sixteenth century suggests a process of village consolidation or fusion, with smaller communities merging to form larger ones. The reason for these mergers is most likely defense.

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"In the fifteenth and sixteenth centuries, there was a transformation in the distribution of Iroquois population across what is now New York State. Instead of small dispersed sites, one sees clusters of sites in areas that in historic times are associated with the Seneca, Cayuga, Onondaga, Oneida, and Mohawk."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"The cause for this shift in the distribution of population appears to have been warfare. Fifteenth—and sixteenth-century communities were generally located in defensible positions and were surrounded by palisades. These Iroquois communities were faced with conflicting alternatives. There is safety in numbers, so larger communities meant greater security. On the other hand, increasingly large communities led to problems of resource availability, sanitation, and social and political integration. While it is believed that small villages could exist indefinitely in some areas, the larger the community, the more frequently it would have had to shift its location."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"Almost a century elapsed between the first appearance of European trade goods on Iroquois sites and written accounts of contact with the New York Iroquois."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"There are no eyewitness descriptions by Europeans of New York Iroquois culture devoid of European material."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"This study has drawn on the written record of early contacts between Europeans and Iroquoians to supplement the archaeological record. This must be done cautiously. The written record is one seen through European eyes and filtered through European ideas and experience. These early written records, like snowshoe tracks seen long after do not always give us a clear picture. Nonetheless, some general patterns emerge."

Engelbrecht, W. 2003*. Iroquoia. The Development of a Native World*. Syracuse University Press, Syracuse, NY.

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"In 1500 what was the Indian's influence on the environment? When whites first saw the Eastern Woodlands or the California coast near San Francisco Bay, they found numerous parklands created by Indian burning techniques. These were not forests primeval, but rather habitats arranged by humans for the benefit of animals necessary for human subsistence — animals such as deer who foraged at the parkland peripheries. In climates which permitted horticulture whites discovered vast fields of crops: corn, beans, squash, and many other food products.

Until approximately eight thousand years ago, Indian hunters relied primarily on the killing of large animals such as mammoth, musk-ox, and long-horned bison . . . These Lithic or stone-age hunters left little trace of themselves on the terrain and apparently had minimal settlement structures. They hunted and supplemented their diet with wild vegetal matter, until the extinction of the large animals in the post-Pleistocene climate.

From this point Indians turned to a more diverse subsistence pattern referred to as Archaic efficiency. Indians adapted their stone tools to an environment which was much like our own in temperature, rainfall, and vegetation . . . Indians depended upon nuts, berries,

roots, and other vegetation, as well as shellfish, fish, and small game animals for their food. Archaic Indians traveled in set patterns, moving from place to place to take advantage of food sources available seasonally. They developed utensils associated with vegetal food production: manos and other milling stones necessary to prepare nuts and seeds for eating."

. . . the fundamental shift to farming was accomplished, supporting a way of life that has continued down to the present in some areas. Sedentary villages, which had already existed in some areas during the Archaic period, became further formalizaed and widespread during the Formative period.

During the Formative period, Indians developed 155 species of domesticated plants used for food, tools, clothing, medicine, and other uses, but they did not domesticate large numbers of animals."

Vecsey, C. and R. W. Venables. 1980. Introduction, pp. xii, xiii-xvii. In *American Indian Environments, Ecological Issues in Native American History.* Syracuse University Press, Syracuse, NY.

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"After having studied a mass of evidence in the biological, physical, and social sciences, I am convinced that Indians were indeed conservators. They were America's first ecologists. Through their burning practices, their patterns of subsistence (by growing, for instance, beans and corn together to preserve the richness of the soil), by creating various hunting preserves for beaver and other animals, and by developing special religious attitudes, Indians preserved a wilderness ecological balance wheel. Even the intensive farming of the Iroquois, without chemical fertilizers and pesticides, protected the ecology of the northeastern forest."

Jacobs, W. R. 1980. Chapter 3, Indians as Ecologists and Other Environmental Themes in American Pp.46 *In* Vecsey, C. and R. W. Venables (Eds.), *American Indian Environments, Ecological Issues in Native American History*. Syracuse University Press, Syracuse, NY.

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*"*13 Ditto [December]. In the morning we went together to the castle over the ice that had frozen in the waterway during the night. When we had gone one half mile, we came into their first castle that stood on a high hill. There were only 36 houses, row on row in the manner of streets, so that we easily could pass through. These houses are constructed and covered with the bark of trees, and are mostly flat above. Some are 100, 90, or 80 steps long; 22 or 23 feet high. There were also some interior doors made of split planks furnished with iron hinges. In some houses we also saw ironwork: iron chains, bolts, harrow teeth, iron hoops, spikes, which they steal when they are away from here. Most of the people were out hunting for bear and deer. These houses were full of grain that they call ONESTI and we corn; indeed, some held 300 or 400 skipples. They make boats and

barrels of tree-bark and sew with it. We ate here many baked and boiled pumpkins which they call ANONSlRA. . . .We slept here in this house, and ate large quantities of pumpkin, beans, and venison so that we suffered of no hunger here but fared as well as it is possible in their country."

van den Bogaert, H. M. 1996. A Journey into Mohawk and Oneida Country 1634-1635. Pp. 3. *In* Snow, D. R., C. T. Gehring, and W. A. Starna (Eds.). *Mohawk Country, Early Narratives about a Native People*. Syracuse University Press, Syracuse, NY.

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"December 20 . . . After going another half mile, with wet and frozen clothing, stockings, and shoes, we came to a very high hill on which stood 32 houses, all similar to the previous ones. Some were 100, 90, 80 steps or paces long."

van den Bogaert, H. M. 1996. A Journey into Mohawk and Oneida Country 1634-1635. Pp. 5. *In* Snow, D. R., C. T. Gehring, and W. A. Starna (Eds.). *Mohawk Country, Early Narratives about a Native People*. Syracuse University Press, Syracuse, NY.

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"December 22 . . . The houses in this castle are full of grain and beans. . . .The castle was surrounded with three rows of palisades. However, now there were only 6 or 7 [posts] left, so thick that it was unbelievable that Indians could do it."

van den Bogaert, H. M. 1996. A Journey into Mohawk and Oneida Country 1634-1635. Pp. 6. *In* Snow, D. R., C. T. Gehring, and W. A. Starna (Eds.). *Mohawk Country, Early Narratives about a Native People*. Syracuse University Press, Syracuse, NY.

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"December 30 . . . This castle is also located on a very high hill and was surrounded with two rows of palisades, 767 steps in circumference, in which there are 66 houses; but built much better and higher than all the others. There were many wooden gables on the houses which were painted with all sorts of animals. They sleep here mostly on raised platforms, more than any other Indians. In the afternoon, one of the councilors came to ask me what we were doing in his country and what we brought him for gifts. I said that we brought him nothing, but that we just came for a visit. However, he said that we were worth nothing because we brought him no gifts. Then he told how the French had traded with them here with six men and had given them good gifts; for they had traded in the aforementioned river last August of this year with six men. We saw there good timber axes, French shirts, coats and razors."

van den Bogaert, H. M. 1996. A Journey into Mohawk and Oneida Country 1634-1635. Pp. 8. *In* Snow, D. R., C. T. Gehring, and W. A. Starna (Eds.).*Mohawk Country, Early Narratives about a Native People*. Syracuse University Press, Syracuse, NY.

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"In the forests here and there are also many partridges, heath-hens and pigeons that fly together in thousands, and sometimes ten, twenty, thirty and even forty and fifty are killed at one shot."

Megapolensis, J., Jr. 1996. A short account of the Mohawk Indians 1644. Pp. 39. *In* Snow, D. R., C. T. Gehring, and W. A. Starna (Eds.). *Mohawk Country, Early Narratives about a Native People*. Syracuse University Press, Syracuse, NY.

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" Their weapons in war were formerly a bow and arrow, with a stone axe and mallet; but now they get from our people guns, swords, iron axes and mallets."

Megapolensis, J., Jr. 1996. A short account of the Mohawk Indians 1644. Pp. 44. *In* Snow, D. R., C. T. Gehring, and W. A. Starna (Eds.). *Mohawk Country, Early Narratives about a Native People*. Syracuse University Press, Syracuse, NY.

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Their Houses, Castles, and Settlements

Their houses are mostly of one and the same shape, without any special embellishment or remarkable design. When building a house, large or small,—for sometimes they build them as long as some hundred feet, though never more than twenty feet wide—they stick long, thin, peeled hickory poles in the ground, as wide apart and as long in a row as the house is to be. The poles are then bent over and fastened one to another, so that it looks like a wagon or arbor as are put in gardens. Next, strips like split laths are laid across these poles from one end to the other. On large houses the strips below are laid rather closer together than on the roofs, and upwards in proportion until they are a foot or so apart. This is then well covered all over with very tough bark. For durability everything is peeled, so that no worms can get in it. Then they go out and get the bark of ash, elm, and chestnut trees; if it is late in summer, rather than peel those, though they need the bark, they take yew trees that grow near the waterside, whose bark yields easily even when the others are dry. With such pieces of bark of about a fathom square, the smooth side turned inward, they cover the entire wooden frame, [the members of which are] up to a foot apart near the top, as has been stated, and tie the bark down securely where needed. If there is a hole or tear in the bark they know how to plug it up, and against shrinking, they let the [sheets of] bark overlap one another. In sum, they arrange it so that their houses repel rain and wind, and are also fairly warm, but they know nothing about fitting them out with rooms, salons, halls, closets, or cabinets. From one end of the house to the other along the center they kindle fires, and the area left open, which is also in the middle, serves as chimney to release the smoke. Often there are sixteen or eighteen families in a house, fewer or more according as the houses are large or small. The door is in the middle, and the people on either side. Everyone knows his space and how far his place extends. If they have room for pot and kettle and whatever else they have, and a place to sleep, they desire no more. This means

that often a hundred or a hundred and fifty and more lodge in one house. Such is the arrangement of a house as they commonly are found everywhere, unless they are out hunting or fishing, then they merely put up a makeshift. In the villages and castles they always do solid and good work. As sites for their castles they tend to prefer, if possible, a high or steep hill near water or a riverside, which is difficult to climb up and often accessible on one side only. They always take care also that it is flat and even on top. This they enclose with a very heavy wooden stockade constructed in a peculiar interlocking diamond pattern. First they lay a heavy tree along the ground, sometimes with a lighter one on top, as wide and as broad as they intend to make the foundation. Then they set heavy oak palisades diagonally in the ground on both sides, which form a cross at the upper end where they are notched to fit tighter together. Next another tree is laid in there to make a very solid work. The palisades stand two deep, sufficiently strong to protect them from a surprise attack or sudden raid by their enemies, but they do not as yet have any knowledge of properly equipping such a work with curtains, bastions, and flanking walls. They also build some small forts here and there on the level and low land near their plantations to shelter their wives and children from an assault, in case they have enemies so nearby that they could be fallen upon by small parties. They think highly of their forts and castles built in that fashion, but these actually are of little consequence, and cause them more harm than good in war with the Christians. In such a castle they often put twenty or thirty houses, up to a hundred feet and some even longer, like those measured by our people at up to 180 paces. Seeing that they manage with so little space in these castles, as related above, they cram such a multitude of people inside that it is unbelievable and leaves one amazed when he sees them come out. Besides these castles they have other settlements that lie in the open in the manner of villages. Most of them have the woods on one side and their corn fields on the other. They also have settlements at some places near waterways where they are accustomed to do much fishing every year, and at the same time do some planting, but those places they leave toward winter and go to live in the castles or in the deep woods where it is warm and firewood is close at hand. There as well no wind can trouble them, and they have good opportunity for hunting, by which they nourish themselves in place of fishing. They seldom abandon their secure castles and large settlements completely; otherwise they find it very easy to pack up and move. They seldom remain long in one place, but follow the season and time of the year. That is, in the summer, when the fishing is good, they move to the watersides and rivers; in the autumn and winter, when meat is best, they seek the woods. Sometimes, but mostly in the spring, they go in droves to the sea shore to eat oysters and to stock up on all kinds of shellfish, which they know how to dry and preserve for a long time."

van der Donck, A. C. 1996. Description of New Netherland. Pg 101-113 *In* Snow, D. R., C. T. Gehring, and W. A. Starna (Eds.)*. Mohawk Country, Early Narratives about a Native People*. Syracuse University Press, Syracuse, NY.

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"Nevertheless they raise so much corn and beans [Turcksche boonen] that we purchase these from them in fully loaded yachts and sloops. They know nothing of manuring, fallow

seasons, and proper tillage. The labor they devote to farming is all manual, using small adzes that are sold to them for the purpose.

van der Donck, A. C. 1996. Description of New Netherland. Pg 121 *In* Snow, D. R., C. T. Gehring, and W. A. Starna (Eds.). *Mohawk Country, Early Narratives about a Native People*. Syracuse University Press, Syracuse, NY.

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"The single most important event in the evolution of the modern American landscape was the clearing of forests for agriculture, fuelwood, and building material."

MacCleery, D. W. 1992. *American Forests: A History of Resiliency and Recovery.* Pp. 3. Forest History Society, Durham, NC.

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Native Peoples' Effect on American Forests

One popular myth is that, prior to European contact, America was dominated by impenetrable, relatively uniform ancient forests that cloaked the landscape in a long-term, static balance with the environment. The reality was far different. Presettlement forests were exceedingly dynamic, shaped by myriad natural and human influences, disturbances, and catastrophic events that had a profound effect on the age and species mix both for plants and animals. The diversity of forest conditions that resulted from these influences was a major factor in creating the wildlife variety and abundance that so impressed early European settlers.

Forests both in the country's East and West were not pristine. They were often strongly influenced by native peoples. In the eastern forests, humans lived in fixed villages and practiced a maize-based agriculture. Domesticated crops commonly accounted for half or more of their diet, with the remainder provided by wild berries, nuts, fruits, and wild game gathered from the adjacent forest.

Although presettlement population figures are constantly debated and revised, what is truly significant is the impact of these peoples on the land. In addition to areas largely cleared of trees for crops, thousands of additional acres around each village were burned periodically to improve game habitat, facilitate travel, reduce insect pests, remove cover for potential enemies, enhance conditions for berries, and drive game. For example in New England it was reported that the native peoples underburned the woods twice a year, in the spring and in the fall. Roger Williams wrote that 'this burning of the Wood to them they count a Benefit, both for destroying of vermin, and keeping downe the Weeds and thickets.'

Early observers reported prolific numbers of animals along forest edges and openings, indicating a forest in which natural or human-induced disturbance was common. Even elk and bison, normally associated with the western prairies, were common in the eastern forest. In the early 1600s, bison were found grazing along the Potomac River in what is

now Virginia and Maryland. Bison were reported in Massachusetts. The presence of these grazing animals indicates abundant grass and forbs that could only have been created by fire."

MacCleery, D. W. 1992. *American Forests: A History of Resiliency and Recovery.* Pp. 6. Forest History Society, Durham, NC.

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"In 1578 Anthony Parkhurst was 'informed that there are above 100 saile of Spaniards that come to take Cod' off Newfoundland, 'besides 20 or 30 more that come from Biskaie to kill Whale for Traine; . . . of Portugals there are not lightly above 50 saile, . . . Of the French nation and Britons [Bretons] are about one hundred and fiftie sailes,' of English only fifty sail*.
*[Hakluyt, *Principall Navigations*, ed. 1903, VIII. 10, 11.]

Grant, W. L. (Ed.) 1907. *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 4.

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"In one, we saw so great a quantity of birds, called penguins*, that we killed them easily with sticks."
[*The great auk, now extinct. Champlain gave to the birds, beasts, and flowers of North America the names of the European varieties most closely resembling them.]

Grant, W. L. (Ed.) 1907. Chapter 1. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 29.

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"Vessels could pass up the river only at the mercy of the cannon on this island, and we deemed the location the most advantageous, not only on account of its situation and good soil, but also on account of the intercourse which we proposed with the savages of these coasts and of the interior, as we should be in the midst of them. We hoped to pacify them in the course of time and put an end to the wars which they carry on with one another, so as to derive service from them in future, and convert them to the Christian faith. This place was named by Sieur de Monts the Island of St. Croix*.

*[*I.e.*, Holy Cross; on account of the physical configuration which he goes on to describe.

The island has of recent years commonly been called Dochet Island, but at the celebration of the three-hundredth anniversary of its settlement it was resolved that it be henceforth called St. Croix Island. See the Maine Historical Society's well-illustrated volume, *Tercentenary of De Monts' Settlement at St. Croix Island*, June 25, 1904 (Portland, 1905).

In 1796 and 1797 the vexed question between the British and American boundary commissioners, appointed in virtue of the Jay Treaty of 1794, as to which river was really the Saint Croix, was set at rest by the dis covery of the outlines of De Monts' original fortifications. See Moore i*nternational Arbitrations*, ch. I., and Ganong's illustrated monograph on Dochet Island in the *Transactions of the Royal Society of Canada*, second series, vol. VIII.

However suitable from a military point of view, or as a trading post, the situation was extremely ill-chosen for a permanent and self-supporting colony. This was clearly seen by Lescarbot, whose ideas on colonization are far in advance of those of his time. "I attach little importance to mines," he says. "The true mine for the settler is waving wheat and grazing cattle."]

Grant, W. L. (Ed.) 1907. Chapter 3. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 40.

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“In May and June, so great a number of herring and bass are caught there that vessels could be loaded with them. The soil is of the finest sort, and there are fifteen or twenty acres of cleared land, where Sieur de Monts had some wheat sown, which flourished finely. The savages come here some- times five or six weeks during the fishing season. All the rest of the country consists of very dense forests. If the land were cleared up, grain would flourish excellently.”

Grant, W. L. (Ed.) 1907. Chapter 3. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 41.

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“The oaks here appear as if they were planted for ornament. I saw only a few firs, but numerous pines on one side of the river; on the other only oaks, and some copse wood which extends far into the interior. And I will state that from the entrance to where we went, about twenty-five leagues, we saw no town, nor village, nor the appearance of there having been one, but one or two cabins of the savages without inhabitants. These were made in the same way as those of the Souriquois*,being covered with the bark of trees. So far as we could judge, the savages on this river are few in number, and are called Etechemins. Moreover, they only come to the islands, and that only during some months in summer for fish and game, of which there is a great quantity. They are a people who have no fixed abode, so far as I could observe and learn from them. For they spend the winter now in one place and now in another, according as they find the best hunting, by which they live when urged by their daily needs, without laying up anything for times of scarcity, which are sometimes severe.”

*[The Kenduskeag, near the city of Bangor. The Souriquois are the Mic-Macs of Nova Scotia. Closely akin to them were the Etechemins, who extended from St. John, N.B., to the neighborhood of Mount Desert. South of these were the Almouchiquois or Armouchiquois].

Grant, W. L. (Ed.) 1907. Chapter 5. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 48.

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"I directed our interpreter to say to our savages that they should cause Bessabez, Cabahis, and their companions to understand that Sieur de Monts had sent me to them to see them, and also their country, and that he desired to preserve friendship with them and to reconcile them with their enemies, the Souriquois and Canadians, and moreover that he desired to inhabit their country and show them how to cultivate it, in order that they might not continue to lead so miserable a life as they were doing, and some other words on the same subject. This our savages interpreted to them, at which they signified their great satisfaction, saying that no greater good could come to them than to have our friendship, and that they desired to live in peace with their enemies, and that we should dwell in their land, in order that they might in future more than ever before engage in hunting beavers, and give us a part of them in return for our providing them with things which they wanted. After he had finished his discourse, I presented them with hatchets, paternosters, caps, knives, and other little knick- knacks, when we separated from each other. All the rest of this day and the following night, until break of day, they did nothing but dance, sing, and make merry, after which we traded for a certain number of beavers.

Grant, W. L. (Ed.) 1907. Chapter 5. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 49-50.

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"… [Merrymeeting Bay] The people live like those in the neighborhood of our settlement; and they told us that the savages, who plant the Indian corn, dwelt very far in the interior, and that they had given up planting it on the coasts on account of the war they had with others, who came and took it away."

Grant, W. L. (Ed.) 1907. Chapter 7. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 60.

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"They till and cultivate the soil, something which we have not hitherto observed. In the place of ploughs, they use an instrument of very hard wood, shaped like a spade. This river is called by the inhabitants of the country Choüacoet*.

The next day Sieur de Monts and I landed to observe their tillage on the bank of the river. We saw their Indian corn, which they raise in gardens. Planting three or four kernels in one place, they then heap up about it a quantity of earth with shells of the signoc before mentioned. Then three feet distant they plant as much more, and thus in succession. With this corn they put in each hill three or four Brazilian beans, which are of different colors. When they grow up, they interlace with the corn, which reaches to the height of from five to six feet; and they keep the ground very free from weeds. We saw there many squashes, and pumpkins, and tobacco, which they likewise cultivate.

The Indian corn which we saw was at that time about two feet high, some of it as high as three. The beans were beginning to flower, as also the pumpkins and squashes. They plant their corn in May, and gather it in September. We saw also a great many nuts, which are small and have several divisions. There were as yet none on the trees, but we found plenty under them, from the preceding year. We saw also many grape-vines, on which there was a remarkably fine berry, from which we made some very good verjuice. We had heretofore seen grapes only on the Island of Bacchus, distant nearly two leagues from this river. Their permanent abode, the tillage, and the fine trees led us to conclude that the air here is milder and better than that where we passed the winter, and at the other places we visited on the coast. But I cannot believe that there is not here a considerable degree of cold, although it is in latitude 43° 45'. The forests in the interior are very thin, although abounding in oaks, beeches, ashes, and elms; in wet places there are many willows. The savages dwell permanently in this place, and have a large cabin surrounded by palisades made of rather large trees placed by the side of each other, in which they take refuge when their enemies make war upon them. They cover their cabins with oak bark. This place is very pleas-ant, and as agreeable as any to be seen. The river is very abundant in fish, and is bordered by meadows. At the mouth there is a small island adapted for the construction of a good fortress, where one could be in security."

*[From this comes the modern Saco]

Grant, W. L. (Ed.) 1907. Chapter 7. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 62-63.

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"We named this place Island Cape, near which we saw a canoe containing five or six savages, who came out near our barque, and then went back and danced on the beach." . . . "After I had drawn with a crayon the bay, and the Island Cape, where we were, with the same crayon they drew the outline of another bay, which they represented as very large; here they placed six pebbles at equal distances apart, giving me to understand by this that these signs represented as many chiefs and tribes." . . . "We found in this place a great many vines, the green grapes on which were a little larger than peas, also many nut-trees, the nuts on which were no larger than musket-balls. The savages told us that all those inhabiting this country cultivated the land and sowed seeds like the others, whom we had

before seen". "From the large number of those we saw, we concluded that these places were better inhabited than the others we had seen."

Grant, W. L. (Ed.) 1907. Chapter 7. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 65.

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"After a stay of some two hours for the sake of observing these people, whose canoes are made of birch bark, like those of the Canadians, Souriquois, and Etechemins, we weighed anchor and set sail with a promise of fine weather." . . . "All along the shore there is a great deal of land cleared up and planted with Indian corn. The country is very pleasant and agreeable, and there is no lack of fine trees. The canoes of those who live there are made of a single piece, and are very liable to turn over if one is not skilful in managing them. We had not before seen any of this kind. They are made in the following manner. After cutting down, at a cost of much labor and time, the largest and tallest tree they can find, by means of stone hatchets (for they have no others except some few which they received from the savages on the coasts of La Cadie, who obtained them in exchange for furs), they remove the bark, and round off the tree except on one side, where they apply fire gradually along its entire length; and sometimes they put red-hot pebble-stones on top. When the fire is too fierce, they extinguish it with a little water, not entirely, but so that the edge of the boat may not be burnt. It being hollowed out as much as they wish, they scrape it all over with stones, which they use instead of knives. These stones resemble our musket flints."

Grant, W. L. (Ed.) 1907. Chapter 7. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 66.

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"But God preserved us, and we anchored near the above-named cape, when there came to us fifteen or sixteen canoes of savages. In some of them there were fifteen or sixteen, who began to manifest great signs of joy, and made various harangues, which we could not in the least understand. Sieur de Monts sent three or four men on shore in our canoe, not only to get water, but to see their chief, whose name was Honabetha. The latter had a number of knives and other trifles, which Sieur de Monts gave him, when he came alongside to see us, together with some of his companions, who were present both along the shore and in their canoes. We received the chief very cordially, and made him welcome; who, after remaining some time, went back. Those whom we had sent to them brought us some little squashes as big as the fist, which we ate as a salad, like cucumbers, and which we found very good. They brought also some purslane, which grows in large quantities among the Indian corn, and of which they make no more account than of weeds. We saw here a great many little houses, scattered over the fields where they plant their Indian corn.

There is, moreover, in this bay a very broad river, which we named River du Guas*."

*[Charles River]

Grant, W. L. (Ed.) 1907. Chapter 7. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 67.

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"The same day we sailed two leagues along a sandy coast, as we passed along which we saw a great many cabins and gardens. The wind being contrary, we entered a little bay to await a time favorable for proceeding. There came to us two or three canoes, which had just been fishing for cod and other fish, which are found there in large numbers."

Grant, W. L. (Ed.) 1907. Chapter 8. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 68.

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"As we continued our course, we saw some land which seemed to us to be islands, but as we came nearer we found it to be the main land, lying to the north-north-west of us, and that it was the cape of a large bay*, containing more than eighteen or nineteen leagues in circuit, into which we had run so far that we had to wear off on the other tack in order to double the cape which we had seen. The latter we named Cap Blanc*, since it contained sands and downs which had a white appearance.

*[Cape Cod Bay, so named by Bartholomew Gosnold in 1602.]

Grant, W. L. (Ed.) 1907. Chapter 8. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 68.

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"There is a large extent of open country along the shore before reaching the woods, which are very attractive and beautiful. We anchored off the coast, and saw some savages, towards whom four of our company proceeded. Making their way upon a sand-bank, they observed something like a bay, and cabins bordering it on all sides."

"The next day, the 20th of the month, we went to the place which our men had seen, and which we found a very dangerous harbor in consequence of the shoals and banks, where we saw breakers in all directions. It was almost low tide when we entered, and there were only four feet of water in the northern passage; at high tide, there are two fathoms. After we had entered, we found the place very spacious, being perhaps three or four leagues in circuit, entirely surrounded by little houses, around each one of which there was as much land as the occupant needed for his support. A small river enters here, which is very pretty,

and in which at low tide there are some three and a half feet of water. There are also two or three brooks bordered by meadows."

Grant, W. L. (Ed.) 1907. Chapter 8. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 70.

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"We named this place Port de Mallebarre*.

The next day, the 21st of the month, Sieur de Monts determined to go and see their habitation. Nine or ten of us accompanied him with our arms; the rest remained to guard the barque. We went about a league along the coast. Before reaching their cabins, we entered a field planted with Indian corn in the manner before described. The corn was in flower, and five and a half feet high. There was some less advanced, which they plant later. We saw many Brazilian beans, and many squashes of various sizes, very good for eating; some tobacco, and roots which they cultivate, the latter having the taste of an artichoke. The woods are filled with oaks, nut-trees, and beautiful cypresses, which are of a reddish color and have a very pleasant odor. There were also several fields entirely uncultivated, the land being allowed to remain fallow. When they wish to plant it, they set fire to the weeds, and then work it over with their wooden spades. Their cabins are round, and covered with heavy thatch made of reeds. In the roof there is an opening of about a foot and a half, whence the smoke from the fire passes out. We asked them if they had their permanent abode in this place, and whether there was much snow. But we were unable to ascertain this fully from them, not understanding their language, although they made an attempt to inform us by signs, by taking some sand in their hands, spreading it out over the ground, and indicating that it was of the color of our collars, and that it reached the depth of a foot. Others made signs that there was less, and gave us to understand also that the harbor never froze; but we were unable to ascertain whether the snow lasted long."

*[Nauset Harbor, though its outline has changed greatly since 1605.]

Grant, W. L. (Ed.) 1907. Chapter 8. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 70.

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"When they eat Indian corn, they boil it in earthen pots, which they make in a way different from ours. They bray it also in wooden mortars and reduce it to flour, of which they then make cakes, like the Indians of Peru."

Grant, W. L. (Ed.) 1907. Chapter 8. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 74.

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"We proceeded to anchor at the mouth, and went in the next day*.

Sieur de Poutrincourt landed with eight or ten of our company. We saw some very fine grapes just ripe, Brazilian peas, pumpkins, squashes, and very good roots, which the savages cultivate, having a taste similar to that of chards. They made us presents of some of these, in exchange for little trifles which we gave them. They had already finished their harvest. We saw two hundred savages in this very pleasant place; and there are here a large number of very fine walnut-trees, cypresses, sassafras, oaks, ashes, and beeches."

*[Gloucester Harbor]

Grant, W. L. (Ed.) 1907. Chapter 13. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 90.

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"Within this harbor there is only a fathom of water, and two at full tide. On the east, there is a bay extending back on the north some three leagues, in which there is an island and two other little bays which adorn the landscape, where there is a considerable quantity of land cleared up, and many little hills, where they cultivate corn and the various grains on which they live. There are, also, very fine vines, many walnut-trees, oaks, cypresses, but only a few pines. All the inhabitants of this place are very fond of agriculture, and provide themselves with Indian corn for the winter, which they store in the following manner:

They make trenches in the sand on the slope of the hills, some five to six feet deep, more or less. Putting their corn and other grains into large grass sacks, they throw them into these trenches, and cover them with sand three or four feet above the surface of the earth, taking it out as their needs require. In this way, it is preserved as well as it would be possible to do in our granaries.

We saw in this place some five to six hundred savages, all naked except their sexual parts, which they cover with a small piece of doe or seal-skin. The women are also naked, and, like the men, cover theirs with skins or leaves. They wear their hair carefully combed and twisted in various ways, both men and women, after the manner of the savages of Choüacoet. Their bodies are well-proportioned, and their skin olive-colored. They adorn themselves with feathers, beads of shell, and other gewgaws, which they arrange very neatly in embroidery work. As weapons, they have bows, arrows, and clubs. They are not so much great hunters as good fishermen and tillers of the land."

They have chiefs, whom they obey in matters of war, but not otherwise, and who engage in labor and hold no higher rank than their companions. Each one has only so much land as he needs for his support.

Their dwellings are separate from each other, according to the land which each one occupies. They are large, of a circular shape, and covered with thatch made of grasses or the husks of Indian corn. They are furnished only with a bed or two, raised a foot from the ground, made of a number of little pieces of wood pressed against each other, on which they arrange a reed mat, after the Spanish style, which is a kind of matting two or three fingers thick: on these they sleep. They have a great many fleas in summer, even in the fields. One day as we went out walking, we were beset by so many of them that we were obliged to change our clothes.

All the harbors, bays, and coasts from Choüacoet are filled with every variety of fish, like those which we have before our habitation, and in such abundance that I can confidently assert that there was not a day or night when we did not see and hear pass by our barque more than a thousand porpoises, which were chasing the smaller fry. There are also many shell-fish of various sorts, principally oysters. Game birds are very plenty.

Some eight or nine days after, while Sieur de Poutrincourt was walking out, as he had previously done, we observed the savages taking down their cabins and sending their women, children, provisions, and other necessaries of life into the woods. This made us suspect some evil intention, and that they purposed to attack those of our company who were working on shore, where they stayed at night in order to guard that which could not be embarked at evening except with much trouble. This proved to be true; for they determined among themselves, after all their effects had been put in a place of security, to come and surprise those on land, taking advantage of them as much as possible, and to carry off all they had. But, if by chance they should find them on their guard, they resolved to come with signs of friendship, as they were wont to do, leaving behind their bows and arrows."

Grant, W. L. (Ed.) 1907. Chapter 14. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 95-98.

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Footnote: "[1]Nearly twelve leagues in a southwesterly direction from their anchorage at Stage Harbor in Chatham would bring them to the entrance of Vineyard Sound. T his was the limit of Champlain's explorations towards the south."

Grant, W. L. (Ed.) 1907. Chapter 15. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 101.

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"In one of these harbors three or four leagues north of Cap de Poutrincourt, we found a very old cross all covered with moss and almost all rotten, a plain indication that before this there had been Christians there. [Cape split]

Grant, W. L. (Ed.) 1907. Chapter 16. The Voyages of 1604-1607. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 113.

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"The savages told me that, after passing the first fall, they meet with eight others, when they go a day's journey without finding any. Then they pass ten others, and enter a lake, which they are three days in crossing, and they are easily able to make ten leagues a day up stream. At the end of the lake there dwells a migratory people. Of the three rivers which flow into this lake, one comes from the north, very near the sea, where they consider it much colder than in their own country; and the other two from other directions in the interior, where are migratory savages, living only from hunting, and where our savages carry the merchandise we give them for their furs, such as beaver, marten, lynx, and otter, which are found there in large numbers, and which they then carry to our vessels. These people of the north report to our savages that they see the salt sea; and, if that is true, as I think it certainly is, it can be nothing but a gulf entering the interior on the north. The savages say that the distance from the north sea to the port of Tadoussac is perhaps forty-five or fifty days' journey, in consequence of the difficulties presented by the roads, rivers, and country, which is very mountainous, and where there is snow for the most part of the year. This is what I have definitely ascertained in regard to this river. I have often wished to explore it, but could not do so without the savages, who were unwilling that I or any of our party should accompany them. Nevertheless, they have promised that I shall do so. This exploration would be desirable, in order to remove the doubts of many persons in regard to the existence of this sea on the north, where it is maintained that the English have gone in these latter years to find a way to China."

Grant, W. L. (Ed.) 1907. Chapter 2. The Voyages to the Great River St. Lawrence from the Year 1608 to that of 1612. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 128-129.

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Footnote: "[1]Or rather, 'green fishing.' This was the fishing carried on the banks by vessels remaining at sea for several months, and was distinguished from the 'dry fishing' carried on

from the shore in small boats, which returned toward nightfall, and exposed their catch to be dried by the sun and wind."

Grant, W. L. (Ed.) 1907. Chapter 1. Third Voyage of Sieur De Champlain the Year 1611. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 190.

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"Near Place Royale there is a little river, extending some distance into the interior, along the entire length of which there are more than sixty acres of land cleared up and like meadows, where grain can be sown and gardens made. Formerly savages tilled these lands, but they abandoned them on account of their wars, in which they were constantly engaged*. There is also a large number of other fine pastures, where any number of cattle can graze."

*[In 1535 Jacques Cartier had found on the spot a flourishing Indian village known as Hochelaga. T he inhabitants were probably Iroquois.]

Grant, W. L. (Ed.) 1907. Chapter 2. Third Voyage of Sieur De Champlain the Year 1611. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 203.

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" . . . we arrived in the country of the Attigouautan at a village called Otoüacha, on the first day of August. Here we found a great change in the country. It was here very fine, the largest part being cleared up, and many hills and several rivers rendering the region agreeable. I went to see their Indian corn, which was at that time far advanced for the season.

Thence I had them guide me to Carhagouha, which was fortified by a triple palisade of wood thirty-five feet high for its defence and protection."

Grant, W. L. (Ed.) 1907. The Voyage of Sieur De Champlain to New France made in the Year 1615. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 283.

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"visited five of the more important villages, which were enclosed with palisades of wood, and reached Cahiagué, the principal village of the country, where there were two hundred large cabins and where all the men of war were to assemble. Now in all these villages they received us very courteously with their simple welcome. All the country where I went contains some twenty to thirty leagues, is very fine, and situated in latitude 44° 30'. It is

very extensively cleared up. They plant in it a great quantity of Indian corn, which grows there finely. They plant likewise squashes, and sunflowers, from the seed of which they make oil, with which they anoint the head. The region is extensively traversed with brooks, discharging into the lake."

Grant, W. L. (Ed.) 1907. The Voyage of Sieur De Champlain to New France made in the Year 1615. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 284.

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"The small tract of country which I visited is thickly settled with a countless number of human beings, not to speak of the other districts where I did not go, and which, according to general report, are as thickly settled or more so than those mentioned above. I reflected what a great misfortune it is that so many poor creatures live and die without the knowledge of God, and even without any religion or law established among them, whether divine, political, or civil; for they neither worship, nor pray to any object, at least so far as I could perceive from their conversation."

Grant, W. L. (Ed.) 1907. The Voyage of Sieur De Champlain to New France made in the Year 1615. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 285.

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"The savages there, assisted by the Dutch, make war upon them, take them prisoners, and cruelly put them to death; and indeed they told us that the preceding year, while making war, they captured three of the Dutch, who were assisting their enemies, as we do the Attigouautans, and while in action one of their own men was killed."

Grant, W. L. (Ed.) 1907. The Voyage of Sieur De Champlain to New France made in the Year 1615. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 286.

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"These were, to make with certain kinds of wood a *cavalier* which should be higher than the palisades. Upon this were to be placed four or five of our arquebusiers, who should keep up a constant fire over their palisades and galleries, which were well provided with stones, and by this means dislodge the enemy who might attack us from their galleries." [Oneida Region]

Grant, W. L. (Ed.) 1907. The Voyage of Sieur De Champlain to New France made in the Year 1615. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 291.

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" . . . for their village was enclosed by four good palisades, which were made of great pieces of wood, interlaced with each other, with an opening of not more than half a foot between two, and which were thirty feet high, with galleries after the manner of a parapet, which they had furnished with double pieces of wood that were proof against our arquebus shots. Moreover it was near a pond where the water was abundant, and was well supplied with gutters, placed between each pair of palisades, to throw out water, which they had also under cover inside, in order to extinguish fire. Now this is the character of their fortifications and defences, which are much stronger than the villages of the Attigouautan and others."

Grant, W. L. (Ed.) 1907. The Voyage of Sieur De Champlain to New France made in the Year 1615. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 292-293.

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"The country of the nation of the Attigouantans is in latitude 44° 30', and extends two hundred and thirty leagues in length westerly, and ten in breadth. It contains eighteen villages, six of which are enclosed and fortified by palisades of wood in triple rows, bound together, on the top of which are galleries, which they provide with stones and water; the former to hurl upon their enemies and the latter to extinguish the fire which their enemies may set to the palisades. The country is pleasant, most of it cleared up. It has the shape of Brittany, and is similarly situated, being almost surrounded by the *Mer Douce*. They assume that these eighteen villages are inhabited by two thousand warriors, not including the common mass, which amounts to perhaps thirty thousand souls.

Their cabins are in the shape of tunnels or arbors, and are covered with the bark of trees. They are from twenty-five to thirty fathoms long, more or less, and six wide, having a passage-way through the middle from ten to twelve feet wide, which extends from one end to the other. On the two sides there is a kind of bench, four feet high, where they sleep in summer, in order to avoid the annoyance of the fleas, of which there were great numbers. In winter they sleep on the ground on mats near the fire, so as to be warmer than they would be on the platform. They lay up a stock of dry wood, with which they fill their cabins, to burn in winter. At the extremity of the cabins there is a space, where they preserve their Indian corn, which they put into great casks made of the bark of trees and placed in the middle of their encampment. They have pieces of wood suspended, on which they put their clothes, provisions, and other things, for fear of the mice, of which there are great numbers. In one of these cabins there may be twelve fires, and twenty-four families. It smokes excessively, from which it follows that many receive serious injury to the eyes, so that they lose their sight towards the close of life. There is no window nor any opening, except that in the upper part of their cabins for the smoke to escape.

This is all that I have been able to learn about their mode of life; and I have described to you fully the kind of dwelling of these people, as far as I have been able to learn it, which is the same as that of all the tribes living in these regions. They sometimes change their villages at intervals of ten, twenty, or thirty years, and transfer them to a distance of one,

two, or three leagues from the preceding situation, except when compelled by their enemies to dislodge, in which case they retire to a greater distance, as the Antouhonorons, who went some forty to fifty leagues. This is the form of their dwellings, which are separated from each other some three or four paces, for fear of fire, of which they are in great dread.

Their life is a miserable one in comparison with our own; but they are happy among themselves, not having experienced anything better, and not imagining that anything more excellent is to be found. Their principal articles of food are Indian corn and Brazilian beans, which they prepare in various ways. By braying in a wooden mortar they reduce the corn to meal. They remove the bran by means of fans made of the bark of trees. From this meal they make bread, using also beans which they first boil, as they do the Indian corn for soup, so that they may be more easily crushed. Then they mix all together, sometimes adding blueberries or dry raspberries, and sometimes pieces of deer's fat, though not often, as this is scarce with them. After steeping the whole in lukewarm water, they make bread in the form of bannocks or pies, which they bake in the ashes. After they are baked they wash them, and from these they often make others by wrapping them in corn leaves, which they fasten to them, and then putting them in boiling water.

But this is not their most common kind. They make another, which they call *migan*, which is as follows: They take the pounded Indian corn, without removing the bran, and put two or three handfuls of it in an earthen pot full of water. This they boil, stirring it from time to time, that it may not burn nor adhere to the pot. Then they put into the pot a small quantity of fish, fresh or dry, according to the season, to give a flavor to the *migan*, as they call it. They make it very often, although it smells badly, especially in winter, either because they do not know how to prepare it rightly, or do not wish to take the trouble to do so. They make two kinds of it, and prepare it very well when they choose. When they use fish the *migan* does not smell badly, but only when it is made with venison. After it is all cooked, they take out the fish, pound it very fine, and then put it all together into the pot, not taking the trouble to remove the appendages, scales, or inwards, as we do, which generally causes a bad taste. It being thus prepared, they deal out to each one his portion. This *migan* is very thin, and without much substance, as may be well supposed. As for drink, there is no need of it, the *migan* being sufficiently thin of itself.

They have another kind of *migan*, namely, they roast new corn before it is ripe, which they preserve and cook whole with fish, or flesh when they have it. Another way is this: they take Indian corn, which is very dry, roast it in the ashes, then bray it and reduce it to meal as in the former case. This they lay up for the journeys which they undertake here and there. The *migan* made in the latter manner is the best according to my taste. Figure H shows the women braying their Indian corn. In preparing it, they cook a large quantity of fish and meat, which they cut into pieces and put into great kettles, which they fill with water and let it all boil well. When this is done, they gather with a spoon from the surface the fat which comes from the meat and fish. Then they put in the meal of the roasted corn, constantly stirring it until the *migan* is cooked and thick as soup. They give to each one a portion, together with a spoonful of the fat. This dish they are accustomed to prepare for banquets, but they do not generally make it.

Now the corn freshly roasted, as above described, is highly esteemed among them. They eat also beans, which they boil with the mass of the roasted flour, mixing in a little fat and fish. Dogs are in request at their banquets, which they often celebrate among themselves, especially in winter, when they are at leisure. In case they go hunting for deer or go fishing, they lay aside what they get for celebrating these banquets, nothing remaining in their cabins but the usual thin *migan*, resembling bran and water, such as is given to hogs to eat.

They have another way of eating the Indian corn. In preparing it, they take it in the ear and put it in water under the mud, leaving it two or three months in this state until they think it is putrefied. Then they remove it, and eat it boiled with meat or fish. They also roast it, and it is better so than boiled. But I assure you that there is nothing that smells so badly as this corn as it comes from the water all muddy. Yet the women and children take it and suck it like sugar-cane, nothing seeming to them to taste better, as they show by their manner. In general they have two meals a day. As for ourselves, we fasted all of Lent and longer, in order to influence them by our example. But it was time lost.

They also fatten bears, which they keep two or three years, for the purpose of their banquets. I observed that if in them and care for them very well, and I showed them the way to keep them, which would be an easy thing for them, since they have good grazing grounds in their country, and in large quantities, for all kinds of animals, horses, oxen, cows, sheep, swine, and other kinds, for lack of which one would consider them badly off, as they seem to be. Yet with all their drawbacks they seem to me to live happily among themselves, since their only ambition is to live and support themselves, and they lead a more settled life than those who wander through the forests like brute beasts. They eat many squashes, which they boil, and roast in the ashes."

Grant, W. L. (Ed.) 1907. The Voyage of Sieur De Champlain to New France made in the Year 1615. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 313-317.

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"There is a moderate number of pleasing and pretty girls, in respect to figure, color, and expression, all being in harmony. Their blood is but little deteriorated, except when they are old. There are among these tribes powerful women of extraordinary height. These have almost the entire care of the house and work; namely, they till the land, plant the Indian corn, lay up a store of wood for the winter, beat the hemp and spin it, making from the thread fishing-nets and other useful things. The women harvest the corn, house it, prepare it for eating, and attend to household matters. Moreover they are expected to attend their husbands from place to place in the fields, filling the office of pack-mule in carrying the baggage, and to do a thousand other things. All the men do is to hunt for deer and other animals, fish, make their cabins, and go to war. Having done these things, they then go to other tribes with which they are acquainted to traffic and make exchanges. On their return, they give themselves up to festivities and dances, which they give to each other, and when these are over they go to sleep, which they like to do best of all things."

Grant, W. L. (Ed.) 1907. The Voyage of Sieur De Champlain to New France made in the Year 1615. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 319.

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"According to their custom each household lives on what it gets by fishing and planting, improving as much land as it needs. They clear it up with great difficulty, since they do not have the implements adapted to this purpose. A party strip the trees of all their branches, which they burn at their base in order to kill them. They clear carefully the land between the trees, and then plant their corn at distances of a pace, putting in each place some ten kernels, and so on until they have made provision for three or four years, fearing that a bad year may befall them. The women attend to the planting and harvesting, as I have said before, and to procuring a supply of wood for winter. All the women aid each other in procuring this provision of wood, which they do in the month of March or April, in the order of two days for each."

Grant, W. L. (Ed.) 1907. The Voyage of Sieur De Champlain to New France made in the Year 1615. In *Voyages of Samuel de Champlain, 1604-1618.* Charles Scribner's Sons, New York. Pp. 327.

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"Since the Pleistocene, it had been occupied by Indians who not only shaped the vegetative mosaic by fire but also kept fuel loads in many areas down to a manageable level. . . . The virgin forest was not encountered in the sixteenth and seventeenth centuries; it was invented in the late eighteenth and early nineteenth centuries. For this condition Indian fire practices were largely responsible.

The tribes of the Northeast cleared the woods for fuel and fields. So successful was their reduction of the forest that they inadvertently assisted in the rapid deployment of European settlements. Nearly every colony occupied sites already cleared by Indians, and as immigration plunged deeper into the interior, European colonists continued to settle on sites often already open and clear or stocked with forests that had appeared between the time the Indians vacated a site and the time the Europeans occupied it."

Pyne, S. J. 1982. Chapter 1. Nature's Fire. Pp 46 *In Fire in America: A cultural history of wildland and rural fire*. Princeton University Press, Princeton, NJ.

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"Since the Indians practiced broadcast burning on areas around their villages, their wood supply must have come from forest clearings, and the observations on forest recession around villages would indicate that the wood came from standing timber. The supply would not have been that strenuous to provide: Indians were skilled with fire and stone

axes, and experiments in Denmark using Neolithic axes have demonstrated that three men could clear about 200 square meters of forest in four hours. Girdling, moreover, might have produced dead wood that later fell of its own accord.

Much of the incentive for clearing came with the expansion of maize agriculture, which required a slash-and-burn regime."

Pyne, S. J. 1982. Chapter 1. Nature's Fire. Pp 46 *In Fire in America: A cultural history of wildland and rural fire*. Princeton University Press, Princeton, NJ.

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"Nonetheless, tribes could sustain the grasslands against reclamation only by means of fire: where fire or tribes were removed, forests sprang up. Where the period between removal and reoccupation was lengthy, "thick" forests appeared, which demanded laborious clearing."

"In many cases the combination of clearing and fires stripped off the forests altogether. 'Barrens,' 'clearings,' and 'deserts' were among the most common sights reported by early explorers. Undoubtedly, Indians maintained these deliberately as hunting grounds. Many of the clearings probably represented abandoned agricultural fields subsequently sustained as grasslands by annual broadcast burning. Whatever their origin, they were common at the time of discovery and were among the chief victims of settlement."

"Dwight concluded that the 'Indians annually, and sometimes oftener, burned such parts of the North American forests as they found sufficiently dry.' The 'object of these conflagrations was to produce fresh and sweet pasture for the purpose of alluring the deer to the spots on which they had been kindled.' Although the Indian 'destroyed both the forest and the soil, he converted them to the most profitable uses for himself. . . Thus, in time, these plains were disforested to the degree in which we now see them, and were gradually converted into pasture grounds. It ought to be observed that they were in all probability burnt over for ages after they were disforested."

" . . . within my own rememberance there were in the township of Northampton spots desolated in a similar manner. These, although laid waste in an inferior degree, were yet so far destroyed as to be left in a great measure naked. Now they are completely covered with a thick forest."

"Not all of the Northeast was converted to 'desert' or savannah. The upper mountains, the river bottoms, the swampy lowlands, and the denser boreal forests were more or less spared annual firings. But there is no reason to think that the process of converting forest to plain was not expanding. Lacking domestic livestock, Indians depended on wildlife for meat, and these anthropogenic fire plains were their pastures. Ironically, many of the forests that occupied the great pine and oak belt of southern New England and across the Appalachians were a byproduct of European settlement. In the short run, the pioneers adopted many of the Indian fire practices—fire hunting, slash-and-burn agriculture,

broadcast fire for pasturage of wild and domestic stock, protective burning against other fires. But in the long run, suppression of Indian fire practices made possible the accidental and deliberate reforestation of the Northeast. Not only was there frequently no virgin forest to clear, but the forest that was cleared was often itself a product of the act of settlement. Though the larger cause for this transformation was the replacement of a hunting and gathering society by one dedicated to agricultural reclamation, the immediate cause was an exchange of fire practices."

Pyne, S. J. 1982. Chapter 1. Nature's Fire. Pp 49-51 *In Fire in America: A cultural history of wildland and rural fire*. Princeton University Press, Princeton, NJ.

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"Even if we can remove most of these ideological biases to discover what it was a traveler actually saw, we much still acknowledge that each traveler visited only a tiny fraction of the region."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 1, Pp. 6. Hill and Wang, New York.

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"It is tempting to believe that when the Europeans arrived in the New World they confronted Virgin Land, the Forest Primeval, a wilderness which had existed for eons uninfluenced by human hands. Nothing could be further from the truth. In Francis Jennings's telling phrase, the land was less virgin than it was widowed. Indians had lived on the continent for thousands of years, and had to a significant extent modified its environment to their purposes. The destruction of Indian communities in fact brought some of the most important ecological changes which followed the Europeans' arrival in American."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 1, Pp. 12. Hill and Wang, New York.

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"lf we assume *priori* that cultures are systems which tend toward ecological stability, we may overlook the evidence from many cultures—even preindustrial ones—that human groups often have significantly *unstable* interactions with their environments. When we say, for instance, that the New England Indians burned forests to clear land for agriculture and to improve hunting, we describe only what they themselves thought the purpose of burning to be. But to go further than this and assert its unconscious "function" in stabilizing Indian relationships with the ecosystem is to deny the evidence from places like Boston and Narragansett Bay that the practice could sometimes go so far as to remove the forest altogether, with deleterious effects for trees and Indians alike."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 1, Pp. 13. Hill and Wang, New York.

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"For the entirety of the sixteenth century, maps of New England consisted of a single line separating ocean from land, accompanied by a string of place-names to indicate landmarks along the shore; the interior remained blank."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 2, Pp. 19. Hill and Wang, New York.

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"Thomas Dudley told of a March day in 1631 when "there flew over all the towns of our plantations. . . .many flocks of doves, each flock containing many thousands and some so many that they obscured the light."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 2, Pp. 23. Hill and Wang, New York.

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"One must not visualize the New England forest at the time of settlement as a dense tangle of huge trees and nearly impenetrable underbrush covering the entire landscape. Along the southern coast, from the Saco River in Maine all the way to the Hudson, the woods were remarkable open, almost park like at times."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 2, Pp. 25. Hill and Wang, New York.

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"Drainage patterns, the hilliness of the ground, the range of soils, the nature of the bedrock, the location of Indian settlements—all played important roles in determining what vegetation and animal life existed where."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 2, Pp. 27. Hill and Wang, New York.

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"Although Cape Cod possesses the mildest and most temperate climate in New England, with 44 inches of rain and over 210 frost-free days annually, its typical forest is made up of scrubby trees adapted to extreme dryness. Chief among these are the pitch pines, deeply rooted trees which serve as ecological indicators of the sand plain community, along with bear and post oaks, the holly, bearberry, and, occasionally, New England's only cactus, the prickly pear."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 2, Pp. 29. Hill and Wang, New York.

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“The effects of fire were by no means limited to Cape Cod; as we shall see, Indians made sure that they were very wide indeed. Throughout New England, fires which destroyed substantial portions of a hardwood forest created the conditions of full sunlight which species such as birch, white pine, and various shrubs needed in order to flourish. When Thomas Morton wrote of riding for ten miles through a forest in which there was "little or no other wood growing" but pine, he was probably describing the site of an old forest fire.”

"The effects of the English wood shortage led colonists to overemphasize the significance of pine in New England forests, thus obscuring the fact that the tree's chief habitats, other than old burned-over areas, were limited to dry ridge tops and sandy flood plains where it did not need to compete with other species for light. There was never the "infinite store" of it that Morton asserted.”

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 2, Pp. 30. Hill and Wang, New York.

Why a tree of a given species grew where it did was the result not only of ecological factors, such as climate, soil, and slope, but of history as well. A fire might shift a forest's composition from one group of species to another. A windstorm might blow over the mature trees of an entire tract of forest and allow the saplings growing beneath them to form a new canopy. Even a minor catastrophe, like the toppling of a single large tree, might create a microenvironment in the shadow of its uprooted base or in the sunlight of the newly broken canopy into which new species might move. Which species grew where in any particular place was thus the result of a cumulative sequence of ecological processes and historical events. The complexity of the precolonial ecosystem was one not merely of space but of time.”

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 2, Pp. 32. Hill and Wang, New York.

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“Whereas the natural ecosystem tended toward a patchwork of diverse communities arranged almost randomly on the landscape —its very continuity depending on that disorder—the human tendency was to systematize the patchwork and impose a more regular pattern on it. People sought to give their landscape a new purposefulness, often by simplifying its seemingly chaotic tangle.

Different peoples of course did this in different ways.”

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 2, Pp. 33. Hill and Wang, New York.

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"The principal social and economic grouping for precolonial New England Indians was the village, a small settlement with perhaps a few hundred inhabitants organized into extended kin networks."

"For some groups, the shape of houses changed from season to season to accommodate different densities of population: small wigwams housing one or two families in the summer became in the winter extended longhouses holding many families."

"Important as habitat differences were, however, the crucial distinction between Indian communities was whether or not they had adopted agriculture. In general, Indians south of the Kennebec River in Maine raised crops as part of their annual subsistence cycles; more northern Indians, on the other hand, as Verrazzano noted in 1524, showed 'no sign of cultivation.'"

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 37-38. Hill and Wang, New York.

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"……..it is best to begin our description of Indian subsistence strategies in the north, where Indians were entirely dependent on the natural abundance of the ecosystem. Only in the north did Indians live entirely as hunter-gatherers, people who bore at least superficial resemblance to the creatures of English fantasy who captured nature's bounties with 'small labor but great pleasure.'"

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 39. Hill and Wang, New York.

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"Northern Indians accepted as a matter of course that the months of February and March, when the animals they hunted were lean and relatively scarce, would be times of little food."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 40. Hill and Wang, New York.

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" the low Indian populations of the precolonial northern forests had relatively little impact on the ecosystems they inhabited. The very abundance which so impressed the Europeans was testimony to this fact. By keeping population densities low, the food

scarcities of winter guaranteed the abundance of spring, and contributed to the overall stability of human relationships to the ecosystem. In this, northern New England Indians were typical of hunting and gathering peoples around the world."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 41. Hill and Wang, New York.

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"The farming Indians of southern New England, among whom the earliest English colonists made their settlements, also engaged in hunting and gathering, but their ability to raise crops put them in a fundamentally different relationship with their environment."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 41-42. Hill and Wang, New York.

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"Grain made up perhaps one-half to two-thirds of the southern New England diet, thereby reducing southern reliance on other foodstuffs; in comparison, northern Indians who raised no grain at all had to obtain two to three times more food energy from hunting and fishing. More importantly, nothing in the northern diet could be stored through the scarce times of winter as effectively as grain, making starvation a much less serious threat in the south than in the north.

The ability of agriculture to smooth out the seasonal scarcities of wild foodstuffs had major consequences for the sizes of Indian populations in New England. The nonagricultural Indians of Maine sustained population densities, on average, of perhaps 41 persons per hundred square miles. The crop-raising Indians of southern New England, on the other hand, probably maintained 287 persons on an identical amount of land, a sevenfold difference."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 42. Hill and Wang, New York.

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"A single Indian woman could raise anywhere from twenty-five to sixty bushels of corn by working an acre or two, enough to provide half or more the annual caloric requirements for a family of five."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 44. Hill and Wang, New York.

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"A single season's catch for a southern New England village of about 400 inhabitants might bring in over 8,500 pounds of edible deer meat and over 7,000 pounds of bear, the two

animals which together contributed more than three-fourths of an inland village's winter meat supply."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 47. Hill and Wang, New York.

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"In both areas, the mobility of village sites and the shift between various subsistence bases reduced potential strains on any particular segment of the ecosystem, keeping the overall human burden low."

"The annual reoccupation of fixed village and planting sites meant that the area around field and camp experienced heavy human use: intensive food gathering, the accumulation of, garbage, and, most importantly, the consumption of firewood."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 48. Hill and Wang, New York.

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"The effect of southern New England Indian villages on their environment was not limited to clearing fields or stripping forests for firewood. What most impressed English visitors was the Indians' burning of extensive sections of the surrounding forest once or twice a year."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 49. Hill and Wang, New York.

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"Northern Indians do not appear to have engaged in such burning. Because they did not practice agriculture and so were less tied to particular sites, they had less incentive to alter the environment of a given spot."

"Conditions in southern New England were quite different. Denser, fixed settlements encouraged heavy use of more limited forest areas, and most inland travel was by land."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 50. Hill and Wang, New York.

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"Colonial observers understood burning as being part of Indian efforts to simplify hunting and facilitate travel; most failed to see its subtler ecological effects. In the first place, it increased the rate at which forest nutrients were recycled into the soil, so that grasses, shrubs, and nonwoody plants tended to grow more luxuriantly following a fire than they had before. Especially on old Indian fields, fire created conditions favorable to

strawberries, blackberries, raspberries, and other gatherable foods. Grasses like the little bluestem were rare in a mature forest, but in a forest burned by Indians they became abundant. The thinning of the forest canopy, which resulted from the elimination of smaller trees, allowed more light to reach the forest floor and further aided such growth. The soil became warmer and drier, discouraging tree species which preferred moister conditions—beech, sugar maple, red maple, black birch—and favoring drier species like oaks when regular burning was allowed to lapse. "

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 50-51. Hill and Wang, New York.

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"Selective Indian burning thus promoted the mosaic quality of New England ecosystems, creating forests in many different states of ecological succession. In particular, regular fires promoted what ecologists call the 'edge effect.' By encouraging the growth of extensive regions which resembled the boundary areas between forests and grasslands, Indians created ideal habitats for a host of wildlife species. Of all early American observers, only the astute Timothy Dwight seems to have commented on this phenomenon. 'The object of these conflagrations,' he wrote, 'was to produce fresh and sweet pasture for the purpose of alluring the deer to the spots on which they had been kindled.' The effect was even subtler than Dwight realized: because the enlarged edge areas actually raised the total herbivorous food supply, they not merely attracted game but helped create much larger populations of it. Indian burning promoted the increase of exactly those species whose abundance so impressed English colonists: elk, deer, beaver, hare, porcupine, turkey, quail, ruffed grouse, and so on. When these populations increased, so did the carnivorous eagles, hawks, lynxes, foxes, and wolves. In short, Indians who hunted game animals were not just taking the "un-planted bounties of nature"; in an important sense, they were harvesting a foodstuff which they had consciously been instrumental in creating.

Few English observers could have realized this. People accustomed to keeping domesticated animals lacked the conceptual tools to realize that Indians were practicing a more distant kind of husbandry of their own."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 51-52. Hill and Wang, New York.

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" . . .Indians held their demands on the ecosystem to a minimum by moving their settlements from habitat to habitat. As one of the earliest European visitors noted, 'They move . . . from one place to another according to the richness of the site and season.' By using other species when they were most plentiful, Indians made sure that no single species became over used."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 3, Pp. 53. Hill and Wang, New York.

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" . . . for well over a century before English settlement began in Massachusetts, Europeans and Indians engaged in a largely unrecorded trade . . . "

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 5, Pp. 82. Hill and Wang, New York.

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"It is important to underscore how little we know of this early fur trade and its effects: the various Indian peoples of New England undoubtedly started interacting with European visitors neither at the same time nor in the same way."

"On the island of Cuttyhunk in 1602, Bartholomew Gosnold obtained the skins of beavers, otters, martens, foxes, rabbits, seals, and deer in exchange for knives and what he calls 'trifles.'"

"In 1605, Champlain was greeted on the Penobscot River by thirty Indians lead by a sachem named Bashaba, who assure him that 'no greater good could come to them than to have our friendship.'"

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 5, Pp. 82. Hill and Wang, New York.

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"Already in 1605, Bashaba's speech displayed the extent to which Indians were orienting their economic activity to enable them to trade with Europeans. Bashaba made clear that he understood the demand for beaver on European markets, that he and his followers were prepared to increase their production to meet the demand, and that he saw friendship with Europeans as a way both of obtaining trade goods and of shifting military balances among Indian villages."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 5, Pp. 83-84. Hill and Wang, New York.

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"A blond European sailor, shipwrecked or abandoned on the Massachusetts coast, had lived as an Indian, had perhaps fathered an Indian child, and had been buried in an Indian grave. His circumstances may or may not have been unusual—even this we cannot know—but they betokened an already long and continuing exchange between peoples on opposite sides of the Atlantic."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 5, Pp. 84. Hill and Wang, New York.

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"As Indian villages vanished, the land on which they had lived began to change. Freed from the annual burnings and soon to be subject to an entirely different agricultural regime, the land's transformations were often so gradual as to be imperceptible. But a few changes were directly attributable to the depopulation caused by the epidemics. Fields which had still stood in grass when the Pilgrims arrived in 1620 were rapidly being reclaimed by forest by the time of the 1630 Puritan migrations to Massachusetts. William Wood spoke of places 'where the Indians died of the plague some fourteen years ago' that were covered with 'much underwood . . . because it hath not been burned.' Between Wessaguscus and Plymouth, the regrowth of forest had already made one extensive area 'unuseful and troublesome to travel through, insomuch that it is called ragged plain because it tears and rents the clothes of them that pass.' Some Indian fields were rapidly overgrown by the strawberries and raspberries in whose abundance colonists took so much delight, but these were an old-field phenomenon that would not reproduce themselves for long without the growing conditions Indians had created for them. When the Puritan migrations began, the animals that had relied on the Indians to maintain their edge habitats were still abundant beyond English belief, but in many areas the edges were beginning to return to forest. Declining animal populations would not be noticed for many years, but habitat conditions were already shifting to produce that effect."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 5, Pp. 90-91. Hill and Wang, New York.

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"The fur trade was thus far more complicated than a simple exchange of European metal goods for Indian beaver skins. It revolutionized Indian economies less by its new technology than by its new commercials, at once utilizing and subverting Indian trade patterns to extend European mercantile ones."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 5, Pp. 97. Hill and Wang, New York.

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"Chief among the animals which suffered from the fur trade was of course the beaver, whose low reproduction rates and sedentary habits made it easily threatened by concentrated hunting. Never abundant in south New England, it was disappearing from Massachusetts coastal regions by 1640 and had ceased to be of much economic significance in the Narragansett country by 1660."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 5, Pp. 99. Hill and Wang, New York.

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"Timothy Dwight in the early nineteenth century said of Connecticut that 'we have hardly any wild animals remaining besides a few small species of no consequence except for their fur.' Such animals had fallen victim especially to the new Indian dependence on a market in prestige goods."

Cronon, W. 1983. Changes in the Land: Indians, Colonists, and the Ecology of New England. Chapter 5, Pp. 107. Hill and Wang, New York.

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"Prior to European colonization, the northeast was predominately forested with seedling-sapling areas likely comprising only 3% of inland forests (a result of wind throw, insect and pathogen outbreaks), but >15% of coastal areas (a result of recurring fires and hurricanes: Lorimer and White, 2003). Beaver flowages probably contributed another 3-4% to the amount of early-successional habitat during this time period (Gotie and Jenks, 1892)."

Oehler, J. D. 2003. State Efforts to promote early-successional habitats on public and private lands in the northeastern United States. *Forest Ecology ad Management* Pp. 169-170.

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"The past extent of coastal grasslands and heathlands is uncertain. A few historical accounts describe the presence of maritime grasslands along the coast, and suggest that they may predate European settlement (Harper 1912). Furthermore, it is unlikely that the many rare native species found in the coastal sandplain communities arrived in the last 300 years, the period since settlement in this area by Europeans. However, fossil pollen studies on Cape Cod and Nantucket indicate that grasslands and heath-lands became extensive only following settlement (Winkler 1985: Tzedakis 1987; Dunwiddie 1989, 1990). The species found in these communities today most likely existed prior to European settlement in openings close to the coast where salt spray suppressed the growth of woody plants, and in openings created by windstorms, fires, and aboriginal agricultural activities."

Dunwiddie, P. W., R. E. Zaremba and K A. Harper. 1996. A Classification of Coastal Heathlands and Sandplain Grasslands in Massachusetts. *Rhodora* 98(894)117-145. Pp. 130.

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"During the centuries immediately preceding European settlement, the Donut Pond pollen record suggests that oak forest with some pine, beech, maple, hickory, and bayberry dominated the Nantucket landscape. This result is similar to that for earlier millennia inferred from the Taupawshas Bog record. Spruce and hemlock pollen, as well as much of the pine, were probably dispersed from the mainland. Evidence from Martha's Vineyard and Cape Cod describes a similar forest.

Several historical accounts corroborate this interpretation of the pollen record. Macy reports that at the time of the settlement of the island it was covered with wood, which protected the crops from the raw easterly winds. . . .The wood, that grew here, was of the same kind as that found on the adjacent parts of the continent. A great proportion of it was oak, of an uncommonly hard and firm texture. It was used for the frames of houses and other mechanical purposes: some buildings, now standing, framed of this wood, appear to be as sound as ever."

The first European settlements in the northern parts of the island probably correspond to the increase in ragweed and grass pollen and the associated declines in oak, beech, maple, hickory, and ash between ninety-six and eighty centimeters. The lack of a decline in pine pollen anywhere in the core suggests that there was relatively little pine growing on the island, even before settlement, and that much of the pollen, especially white pine, was derived from mainland sources."

Dunwiddie, P. W. 1989. Forest and Heath: The Shaping of Vegetation on Nantucket Island. Journal of Forest History 3:126-133. Pp. 130.

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"Other long-term changes have been caused by man. Some forest clearance may have occurred around one thousand years ago as native peoples adopted an agrarian lifestyle and introduced corn, beans, and squash. Particularly in the exposed coastal areas of Nantucket, trees and taller shrubs may have been slow to recolonize the areas cleared for agriculture and firewood. Population increases prompted by the shift to settled agriculture may have caused additional pressure on forests."

Dunwiddie, P. W. 1989. Forest and Heath: The Shaping of Vegetation on Nantucket Island. Journal of Forest History 3:126-133. Pp. 132.

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"Fires near Native American settlements are believed to have been common prior to European colonization (Backman, 1984; Patterson and Sassaman, 1988) and could have created localized areas of barrens and grassland vegetation (Motzkin and Foster, 2002). Forests around Deep Pond, about 15 km northwest of the dwarf pine plains, seem to have been burned by intense fires at least eight times in the past 2200 years based on charcoal in sediment cores (Backman, 1984). Pitch pine and oak pollen are common in pre-

Columbian sediments in the Deep Pond core, indicating the presence of either pine-oak woodland or barrens vegetation."

> Jordan, M. J., W. A. Patterson, III, and A. G. Windisch. 2003. Conceptual ecological models for the Long Island pitch pine barrens: implications for managing rare plant communities. *Forest Ecology and Management* 185:151-168. Pp. 154.

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"Paleoecological evidence strongly suggests fire was a common occurrence on the Montague Plains from 500 to at least 2,000 years before European settlement. Throughout North America, prehistoric Native Americans used fire as a landscape management tool to increase browse and mast for game species, drive game, increase production in certain food-bearing plants, ease travel through the wilderness by clearing underbrush, communicate among groups, facilitate effective defense of their communities and territories, and, once agriculture was adopted, to clear and fertilize crop lands."

> University of Massachusetts. 2005. *Managing Fuels in Northeastern Barrens.* http://www.umass.edu/nebarrensfuels/ma_barrens/montague/index.html.

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"Anthroprogenic fire has shaped the landscape of New England since before European settlement (Bromley, 1935; Day, 1953; Patterson and Sassman, 1988). Native Americans used fire as a tool for clearing understory vegetation and providing new vegetation to support game species such as white-tailed deer *(Odocoileus virginianus)* (Bromley, 1935 and Day 1953) although it is not known if this occurred on the central sandplain of Martha's Vineyard (Stevens, 1996; Ruffner and Patterson, 1999). Fire was also employed to clear areas for agriculture and to protect Native American settlements from wildfires (Pyne et al., 1996). Evidence from hearths shows that Native Americans in New England were utilizing fire as early as 12,000 years BP, although it is unclear when the practice of setting fires for hunting and agriculture purposes began (Patterson and Sassman, 1988)."

> Mouw, A. R. 2002. *Modern and Historic Fire Regimes of Central Martha's Vineyard, Massachusetts*. MS thesis. University of Massachusetts, Amherst. Pp. 6.

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"Fire has played a major role in creating the Vineyard's unique sandplain grassland ecosystem. For centuries, the Wampanoag worked with fire to clear underbrush and improve the ease of travel and visibility on the Island. Fire also improved agriculture. The native blueberry bush produces more flowers and thus more berries the year after a burn, according to Mr. Bale. This is not only auspicious for berry collecting, but for attracting deer to hunt as well. As a result of centuries of fire-based land management techniques,

and the occasional wildfire, the unique flora and fauna of the Island has become not only fire-adapted but fire-dependent."

> Brannen, P. 2010. Spring Burns Begin Across Island to Dampen Danger of Big Fires. *Vineyard Gazette Online*. March 19, 2010. http://www.mvgazette.com/article.php?24791.

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"Once, Native American Indians burned and cleared areas to grow crops. Later, colonists kept land open by grazing sheep and cattle. These disturbance regimes allowed early succession plant communities to thrive. Then, areas which were open fields slowly turned over to the more aggressive scrub oak and huckleberry landscape that we see today. Consequently, land management practices, including burning, are being implemented on conservation land to enhance and restore the rare sandplain ecosystems."

> Nantucket Land Council. January 2002. *Science Notes: NLC Joins Prescribed Burns*. http://www.nantucketlandcouncil.org/Newsletters.html.

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"Because of threats of succession, development, and erosion and due to the unique and rare nature of glacial outwash plain habitats, sandplain grasslands and heathlands have received the highest priority for protection in Massachusetts. . . . Management is needed to maintain these globally rare communities, for Native American fires across the landscape and intensive agriculture have ceased, and encroaching forests and development have reduced the extent and connectivity of these habitats. . . . Our ethical and moral obligation to preserving the variety of life on this planet necessitates action."

> The Trustees of Reservations. 1999. Islands Region Prescribed Burn Program. http://personal.vineyard.net/trustees/cmuburn2.html [this web address is no longer functioning].

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"Because the Woodland villages were located in the places first cleared and settled by Europeans, these villages were destroyed without a trace before being studied and recorded."

"The camps that provided the fish, game, wild plants, and other resources for the Woodland villages look so much like their Archaic counterparts that one can scarcely tell the difference."

"The use of domesticated plants occurred very late in New England because of the short growing season. The Indians had learned to exist upon the wild foods very comfortably and did not need horticulture. To depend upon new plants for one's very existence was to court

disaster. Corn, beans, and squash, however, were grown to supplement their diet and tobacco was cultivated for rituals."

> Moeller, R. W. 1996. Some Thoughts on Late Woodland Ecology. In C. Lindner and E. V. Curtin (Eds.) *A Northeastern Millennium: History and Archaeology*. *Journal of Middle Atlantic Archaeology* 12:61-66.

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"About one thousand years ago, the Maya Corn God finally bestowed his riches on northeastern North America. Seeds of corn may have spread into the Northeast in the form of short-season varieties that arrived via the vast trade routes that emanated from the Midwest Cultivars of that eight-row flint corn are still grown in some native communities.

Into the gardens of the Iroquois and the Abenaki in the north and of the Wampanoag to the south and east, corn was quickly integrated. Similar to the gardens of Mesoamerica, cleared openings in the forest were established in the Northeast by girdling trees and burning them on the stump. A complement to squash and beans, corn was adopted as the third of The Three Sisters. Corn provided support for the twining bean vines, while the roots of beans, a legume, enriched the soil with the nitrogen so essential for productive yields of corn. Squash and pumpkins trailed over the soil in between the mounds of corn and beans, inhibiting weeds, preserving soil moisture, and preventing erosion. Harvested corn was dried and stripped from the ear, and the kernels were stored in pits dug into the floors of special lodges."

> Caduto, M. J. Spring 2011. The Corn God. The origin and evolution of corn. Sanctuary (Massachusetts Audubon Society) 49:6-8.

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Moshup the Giant. A Wampanoag Legend
http://www.firstpeople.us/FP-Html-Legends/Moshup-the-Giant-Wampanoag.html
Moshup loved whale meat, which he would catch with his hands, then cook over a fire he made by ripping the trees that surrounded him out of the ground. He did so much of this that there are barely any trees left today in the town of Gay Head.

Hope Is the Thing with Feathers: A Personal Chronicle of Vanished Birds
2009 Grand Central Publishing, NY
Christopher Cokinos

Fire created the Heath Hens' home, just as it creates the Greater Prairie-Chickens' home. Set by lightning strikes, Native Americans and, on Martha's Vineyard, blueberry farmers, fire kept forests from establishing themselves, thuis generating the brushy scrub-oak and

berry-bush barrens Heath hens needed for foraging andnesting, as well as the meadows needed for booming grounds or leks. (Scrub oaks can withstand brutally hot flames).

Fire Management Today Volume 60 • No. 3 • Summer 2000
WHERE HAVE ALL THE FIRES GONE? Stephen J. Pyne

Pre-Columbian Fire Practices
Did American Indians really burn the land? Of course they did. All peoples do, even those committed to industrial combustion, who disguise their fires in machines. The issue is whether and how those fires affected the landscape.

Much of the burning was systematic. Pre-Columbian peoples fired along routes of travel, and they burned patches where flame could help them extract some resource— camas, deer, huckleberries, maize. Te outcome was a kind of fire foraging, even fire cultivating, such that strips and patches burned as fuel became available. But much burning resulted from malice, play, war, accident, escapes, and sheer fire littering. The land was peppered with human-inspired embers.

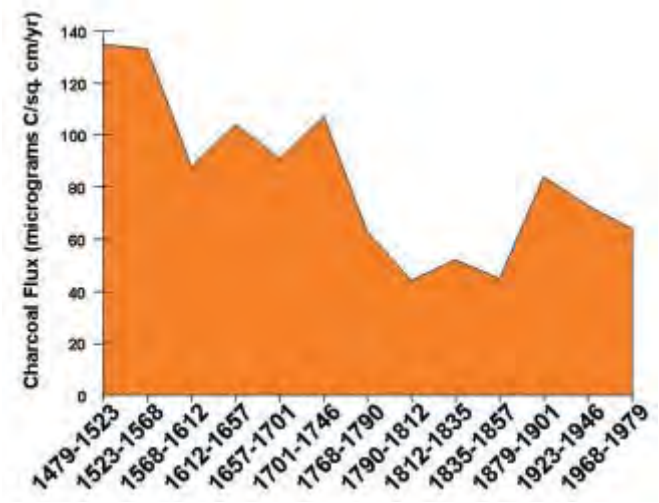
And this, from a fire ecology perspective, is the meaning of agriculture. One could fashion fuel, dry it, and burn it, more or less in defiance of natural biases. Forests broke into a kaleidoscope of fields and fallow, a multitude of new habitats for flame. Not least of all, agriculture could complement an aboriginal economy and thus carry anthropogenic fire almost everywhere. The eastern half of the United States knew fire precisely for these reasons. Only the most inhospitable landscapes escaped.

Fire is as effective removed as applied, and therein lies much of its ecological (and moral) magic.
Places that had known regular fire, perhaps for thousands of years, suffered when those fires vanished.
Set aside and protected as reserves, the public lands have witnessed staggering biotic changes that could not have occurred had fire continued. And it is obvious that fire did not continue: The evidence is scrawled like woody graffiti all over the land itself.

Worse, that too-simple explanation for the missing flame sustains a problematic myth: that Europe found a wilderness and tried to render it into a garden. Closer to the truth, the critics can well reply, is that Europe found a garden and has tried to render it into a wilderness. Yet the myth has power, and the choice between stories has meaning for fire management. The first story argues that nature alone can restore itself; the second, that anthropogenic fire must return.

The missing fires are those that were once set by the now missing peoples, the Indians who were removed and the newcomers who, on the public lands, failed to pick up the Indians' fallen torches. The reasons for putting some of that flame back are compelling. But returning fire to the land in hopes of restoring pristine pre- Columbian vistas is not one of

them. We must reinstate fire because we cannot sustain the landscapes we value without burning. We should reinstate fire because burning is what we do as human beings, as holders of a species monopoly over flame, for whom fire neutrality is not an option. We have no choice, no more than did American Indians, Australian Aborigines, or European peasants. We must decide how to apply and withhold fire in the landscape because we still remain— all of us, all peoples, across a hundred millennia—the keepers of the planetary flame.



A chronology of charcoal preserved in sediments off the Pacific coast of Central America (Suman 1991). Note that the greatest input occurred in the 50 years prior to the Spanish Conquest ca. (1523). When the native population crashed, so did the fire regimes. Analogous events probably occurred across most of North America.

Unnatural Abundance
Charles C. Mann
The Newsletter of the Ecological Landscaping Association Vol. 14, No. 4 Winter 2008

American Indians were ambitious, sophisticated landscape managers. In South America, they drained vast areas of wetland; scattered networks of raised agricultural fields in Bolivia, Colombia and the Guianas; and converted much of Amazonia into an "anthropogenic" forest - a mix of gardens, orchards and agricultural forests. Visitors to the Andes still gawp at the Indian terraces that carpet the highlands - more than 2,000 square miles of them in Peru alone, according to the geographer William M. Denevan, most of them at more than 9,000 feet.

Above the Rio Grande, Indians' principal land-management tool was fire, used to create and maintain open, game-friendly forests and grazing lands. Native pyromania created a third or more of the Midwestern prairie; fire kept Eastern forests so open that the first European colonists reported being able to ride through the woods in carriages. In California, Oregon,

Texas and a hundred other places, Indian burning governed the conditions under which other species thrived or failed.

When disease carried away native societies, the torches went out. Trees and underbrush erupted in ways that had not been seen for millennia, filling in areas kept open by Indian axes and Indian fire. "Almost wherever the European went, forests followed," wrote the ecological historian Stephen Pyne. Far from destroying wilderness, in other words, European settlers created it - only it was a peculiar, unprecedented kind of wilderness, shot through with European invaders and characterized by population outbreaks from species that had formerly been uncommon.
Eighteenth-century visitors to the Western hemisphere were awed by its bounty, of which the iconic symbol is the passenger pigeon. Approaching what is now St. Louis on a voyage up the Mississippi in 1770, Jean-Bernard Bossu was overwhelmed by "clouds of turtle-doves" that passed for hours overhead. The flocks of pigeons were so dense, he wrote, that "sometimes as many as 80 of them are killed with one shot."

Bossu was not far downstream from the ruins of Cahokia, once the biggest Indian settlement north of the Rio Grande. Yet in a 2003 review of archeological studies of the Cahokians' diet, Bernd Herrmann, an environmental historian, and William I. Woods, an archaeologist and soil scientist, found that traces of passenger pigeon were "only a very minor component."

Another archaeologist, Thomas Neumann, had previously reviewed the results of studies in the Southeast and came to the same conclusion. Other researchers have made similar arguments for bison, elk and moose. All were kept down by Indians - the big mammals by hunting, the pigeon because Indians both ate it and competed with it for the nuts on which it depended. The huge herds and flocks seen by Europeans were evidence not of American bounty but of Indian absence.

These population booms ended as the Europeans consumed the excess (or overconsumed it, in the case of the passenger pigeon). But the ecological mixing inaugurated in this country by the Pilgrims continues apace - ask the farmers in the Southeast whose peach orchards are being invaded by kudzu from Japan. Ever since Plymouth, Americans have lived, for better or worse, in a new and distinctly contemporary kind of environment, one marked by continued, rapid ecological change. What was being created that first Thanksgiving was nothing less than the American landscape itself.

"Today New England is again heavily forested, almost to the maximum extent achieved over the last few millennia."

"In the period AD 500-1000, Indians south of the Kennebec River in Maine shifted from food gathering to food production and storage (Likens, 1972)."

"Indian population densities on the offshore New England islands of Nantucket, Martha's Vineyard and Block Island were about 10 times higher than on the mainland coasts, likely

due to the rich marine resources there and the intensive cultivation of corn (Cook, 1976:45)."

"Indian settlements and agriculture produced a substantially open landscape in some areas."

"Corn cultivation resulted in major alterations of the landscape."

"It is clear that Indian burning resulted in a mosaic of fields and forests in all stages of succession in the vicinities of villages and older village sites."

"An abundance of deer, turkey, rabbit, grouse and heath hens were noted by the earliest English colonists (Wood [1634] 1977); Josselyn, 1675; Higgeson, 1630). This abundance of game was produced by Indian agriculture, fuelwood cutting and periodic intentional burning of woodlands which created a patchy landscape of fields and forest in various stages of succession.
Prior to European settlement, much of the northeastern coastal forest of the United States from Maine to Virginia had a considerable amount and variety of open habitats (Plate A). The dominant habitat of the region was forest but there is ample evidence that extensive grasslands and oak openings were common in eastern North America before European settlement (e.g. Askins, 1993; Niering and Dreyer, 1989)."

"Indian activities in southern New England created a mosaic landscape of fields and forests once corn cultivation became established, probably 1000— 1500 years ago. It is not known how far north into the region's interior Indians modified the landscape but their impact was dramatic where they practised agriculture."

"Where agricultural Indians had lived, forests in the eighteenth century had reclaimed old Indian clearings and probably did not contain large old trees."

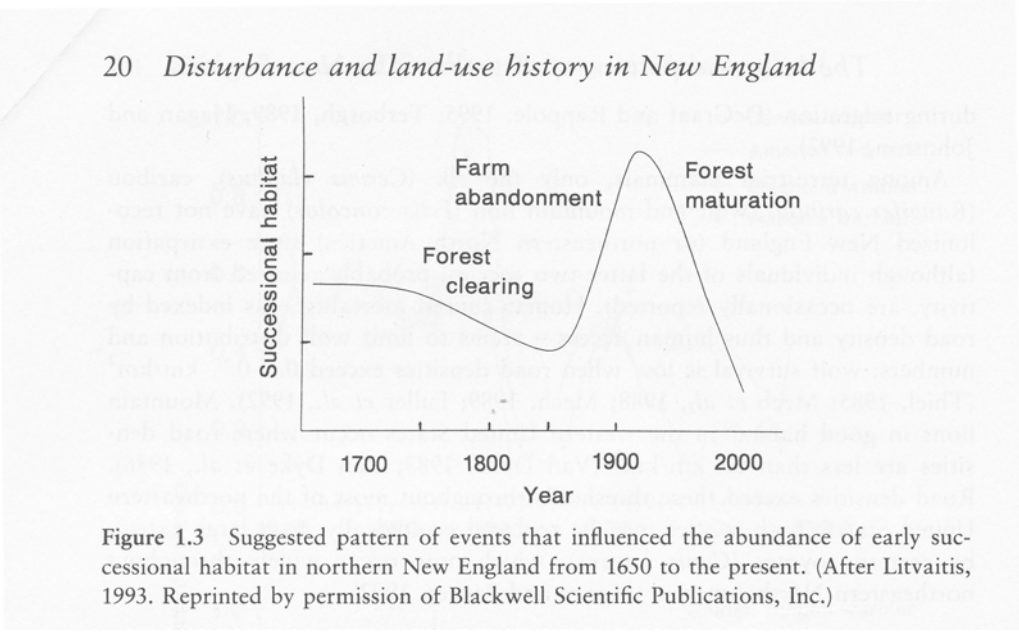


Figure 1.3 Suggested pattern of events that influenced the abundance of early successional habitat in northern New England from 1650 to the present. (After Litvaitis, 1993. Reprinted by permission of Blackwell Scientific Publications, Inc.)

DeGraaf, R. M. and R. I. Miller. 1996. Chapter 1. The importance of disturbance and land-use history in New England: implications for forested landscapes and wildlife conservation. In *Conservation of Faunal Diversity in Forested Landscapes.* Champman & Hall, London, UK.

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"'Champlain, in 1615, assisting the Huron invaders against an Iroquoian town in central New York, said that" . . . their village was enclosed by four stout palisades, made of large timbers, thirty feet in height, interlaced together with not more than half a foot between them, and galleries like a parapet which they had fitted with double timbers, proof against our shots;. . . ' " (Biggar 1929:70).

"Describing the castle or town of the Oneidas in Madison County, van den Bogaert (1634-1635) says: 'And then we marched confidently to the castle, where the savages divided into two rows, and so let us pass through them by the gate, which was . . . the one we went through ... 3 ½ feet wide, and at the top were standing three big wooden images, carved like men, and with them I saw three scalps fluttering in the wind, that they had taken from their foes as a token of the truth of their victory. This castle has two gates, one on the east and one on the west side. On the east side a scalp was also hanging: but this gate was 1 ½ feet smaller than the other one '. . . . 'This castle likewise is situated on a very high hill, and was surrounded with two rows of palisades. It was 767 paces in circumference. There are 66 houses, but much better, higher, and more finished than all the others we saw.' (Jameson 1909: 148-149)."

"The data recovered from Oak Hill sites, ... present a homogeneous, mundane picture of agriculture groups, securely established within the Canadian biotic province of central and

eastern New York, assured of a stable food supply which enabled them to live within fair-sized villages yet preoccupied with the fear of violent death at the hands of their enemies.

> Ritchie, W. A., and R. E. Funk. 1973. *Aboriginal Settlement Patterns in the Northeast.* Vol. Memoir 20. Albany, NY: The University of the State of New York.

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"The number and fatness of deer in New England astonished English settiers as fully as the quantity and richness of the wild strawberry crop. What they failed to realize was that the deer were no more wild than the strawberries. Indians built no cattle barns, fenced no pastures, mowed no hay; but they raised venison as surely as the English raised sheep. Twice a year the people of southern New England burned vast tracts of forest. The result was a forest that Englishmen could only marvel at: a forest of great, lofty trees filtering sunlight onto an open, grassy floor abounding with white-tailed deer.

The deer were not there by chance. Burning kept down brush, opened the canopy, and let far more light reach the floor than nature would have allowed. On the dry, well-lit forest floor, New England's native little bluestem grass grew rampant, nourishing much larger populations of deer than a natural woodland could feed.

Connecticut, Rhode Island, and Massachusetts were a cultivated wilderness, a countryside of small fields, berry patches, and managed forests. North of the Kennebec the land was as wild as a European could imagine it."

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"Populous Indian villages along the shore of southern Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut faced increasing conflict between the need to stay on the coast for fishing, and the imperative to move inland and open up new cornfields. We cannot know what they would have done as deforestation progressed, forests receded farther from the coast, and old fields lost their fertility, although there is evidence that Indians on Cape Cod used fish to fertilize their depleted cornfields.

. . . .we can guess that a population already depending on corn and beans for more than half of its caloric intake would have moved its planting fields inland where virgin soil was available, and eaten more corn and beans."

> Muir, D. 2000. *Reflections in Bullough's Pond. Economy and Ecosystem in New England*. University Press of New England, Hanover, NH.

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"these biomes were humanized in terms of physiognomy, species composition, and reduced

biodiversity—long before the arrival of Europeans. Native American use of fire, clearance for cultivation, and other forms of manipulation or exploitation had left an unambiguous imprint: the forests of eastern North America were relatively open, the prairies of Indiana and Illinois were unable to return to a woodland-grass despite the shifts to moister climate during the late Holocene, and the Amazon rain forest was (and remains) anything but virgin."

> Butzer, K. W. 1992. The Americas before and after 1492: An introduction to current geographical research. *Annals of the Association of American Geographers* 82:345-368.

"The forests of New England, the Midwest, and the Southeast had been disturbed to varying degrees by Indian activity prior to European occupation. Agricultural clearing and burning had converted much of the forest into successional (fallow) growth and into semi-permanent grassy openings (meadows, barrens, plains, glades, savannas prairies) often of consideration size. Much of the mature forest was characterized by an open, herbaceous understory, reflecting frequent ground fires."

"Forman and Russell (1983, 5) expand the argument to North American in General" 'regular and widespread Indian burning (Day 1953) [is] an unlikely hypothesis that regretfully has been accepted in the popular literature and consciousness.'"

"Cronon (1983, 108), Pyne (1982, 51), Silver (1990, 104), Martin 1978, 181-82), and Williams (1989, 49) all maintain that the eastern forests recovered and filled as a result of Indian depopulation, field abandonment, and reduction in burning. While probably correct, these writers give few specific examples, so further research is needed."

> Denevan, W. 1992. Native American Populations in 1492: recent research and a revised hemispheric estimate. Pp. xvii-xxix. *In The Native Population of the Americas in 1492,* edited by W. Denevan. University of Wisconsin Press, Madison, WI.

"Basques, Bretons, and Bristolmen were as motivated by greed and geological inquisitiveness as Columbus and were active in westward voyaging even before 1492."

> Allen, J. A. 1992. From Cabot to Cartier: The early exploration of eastern North America. 1497-1543. *In The Native Population of the Americas in 1492*, edited by W. Denevan. University of Wisconsin Press, Madison, WI.

McBride (2007) hypothesizes that at the time of Contact, the Mashantucket Pequot were semi-sedentary and relatively mobile with a mixed subsistence strategy that included hunting, gathering, fishing and horticultural activities. The archaeological record from southern New England signals that the creation, use and management of the plant *and* animal resources within these homelands did not become specialized or focused on a very few natural resources, even with the introduction of maize at 1000 A.D. (Chilton 1999; 2001, 2008, 2010; Heckenberger, Petersen and Sidell 1992). Bernstein's (1993:1) observation that "intensification took the form of economic diversification and cultural modification of the landscape" well characterizes plant and animal use in southern New England. Evidence at sites in Rhode Island (Bernstein 1993), Connecticut (Bendremer 1993; McBride and Dewar 1987) and also within Middle Connecticut River Valley (Chilton 2002, 2008; Chilton et al. 2000; Kasper 2008) indicates that whether Native communities plant maize, harvest nuts or even shellfish, they did not specialize on any one specific resource. Instead, Native communities appear to have use a diverse spectrum of plant and animals resources within their Indigenous homelands (Bernstein 1993; Chilton 1999; Sidell 2002).

Archaeologists characterize the Algonquian groups of southern New England at the time of contact, as exploiting a variety of wild plants within different habitats to create a diverse subsistence base, even while participating in horticultural and agricultural activities (Chilton 1999, 2002; Bernstein 1993; George and Dewar 1999; Little 1995; Johnson 1999; Stein 2008). Around 1000 A.D., Native communities within this region also incorporated a range of domesticates Indigenous to the Americas, like *Zea mays* (corn), *Helianthus* sp. (sunflower), *Phaseolous vulgaris* (bean) and *Curcubita* sp. (squash) (Bendremer 1999; Largy and Morenon 2008; Little 2002; Little and Schoeninger 1995; Chilton 2006). However, this introduction of maize apparently did not curtail the use or importance of other wild plants found in the environmentally diverse homelands (Chilton 1999; 2010) . For example, Native communities continued to use the products of nut-bearing trees and other wild seeds (Bennett 1955; Kasper 2008; Bernstein 1999), including fleshy and weedy ones, such as *Chenopodium* sp. (goosefoot), *Rhus* sp. (sumac), *Vaccinium* sp. (blueberry) and nut mast, such as *Carya* sp. (hickory), *Corylus* sp. (hazelnut) and *Quercus* sp. (oak) (Bendremer 1999; Newsom and Trieu 2006).

I have evaluated the hypothesis that Indigenous households and communities made decisions about plants that allowed them to remain flexible in their social organization, and maintain their Indigenous identity within colonized spaces. There are alternative hypotheses, which could have been explored with this dissertation. For example, that

Indigenous individuals and communities kept living like Indigenous peoples because they had no choice. They had limited resources to access the Euro-American lifestyle and thus they were poor and marginal and subsisted however they could, including continuing cultural practices that would keep them alive within the colonized landscape. However, in this dissertation, it is assumed that agency or human choice is embedded within cultural practices and knowledge structures of the communities under study.

I did not excavate the data analyzed in this dissertation, nor were they collected in the field to settle a specific set of competing hypotheses. They were collected to document decisions taken by Mashantucket Pequot, in regard to plant resources (about which not much was known, much less published before). It would require the critical test of new problem-directed field work, to settle the question if the Mashantucket Pequot decisions were completely forced by their having been marginalized so completely that the observed behaviors were the only choice they had, as a result of their dire poverty and colonial subjugation, or if they can be better explained by an agency approach, in which the decisions were the ones taken because they were the culturally most appropriate and best informed decisions for Mashantucket Pequot individuals to take, within the range of decisions that would have been open to them.

Imagine how much more we would know about the Mashantucket plant strategies if we had desert plant preservation conditions in New England.

The data presented within this investigation support the notion that the Mashantucket Pequot chose plant strategies that has them 'living with the land' and the "hidden harvests" of wild plants, from nuts to wild weedy and fruits plants, and also tropical cultigens dominate the archaeological assemblages

Viewed as empowering but couldn't it just as easily be seen as denigrating? They had the choice but did not accept it? They insisted on continuity. But in fact they were forced into it?

The colonial narratives document significant pressures from the colonial authorities to either engage with or not to interfere in the Euro-American notion of improvements to the land. In response, the Mashantucket Pequot choose to choose to participate only in those plant strategies that allowed to maintain if not broaden the diversity, variation, and flexibility in the use of plants and their habitats.

What % of people stayed versus moved away? What % of people not found on landscape? (See below) How would marginalized people act?
What are alternative hypotheses?

Documentary research clearly indicates that there are two communities during this

period that were semi-aggregated on the landscape
The colonizing group in this investigation - the English, incorporated land, population, and resources of the Mashantucket Pequot community.

With reference to plant usage, one can document their plant-related activities, but also their oral history and other narratives.

what other possibilities could there be? Wouldn't any population, studied at two different places in time, show some continuity and some change?

In regards to diet composition from 1675-1800 A.D, it is hypothesized that a diverse set of plant resources will continue to be utilized by the Mashantucket Pequot.

WHAT IS ALTERNATIVE HYPOTHESIS?

Although there were significant pressures from the colonial authorities to have the Native Americans engage in the Euro-American notion of improvements to the land, Indigenous communities continued to choose to engage in specific plant strategies that revolved around the use of a diversity of plants and habitats, which may have been contrastive to some of the supplementary colonial narratives mentioned above.

A broad diet associated with the Mashantucket Pequot plant use it would allow them to remain relatively mobile within their reservation lands and allowed them to stay out of the colonial market as much as possible. It would also keep them relatively invisible in this section of southeastern New England and inaccessible to the colonizers.

(2) Continued use of tropical cultigens, such as maize, beans and squash and native domesticates, such as sunflower and goosefoot in the heterarchical ways they had interacted with them in the past.

it is hypothesized that land use would remain stable and unchanged !!!!

the Mashantucket Pequot would use their land to be as contrastive as possible to their colonizers, because that helped them to retain their social difference and control, and that difference would help them to maintain their distance from the colonizers, and to remain socially distinct and autonomous.

Cultural fluidity within the Mashantucket Pequot homeland

At the beginning of the Contact period, the traditional homeland of the Pequot

comprised roughly 250 square miles of southeastern New England

The archaeological record from southern New England signals that the creation, use and management of the plant *and* animal resources within these homelands did not become specialized or focused on a very few natural resources, even with the introduction of maize at 1000 A.D.

woodland and open field habitats

Wetland research is important because *more than half of the land mass* within current reservation boundaries at Mashantucket is wetland associated

men were traditionally tied to hunting activities and this loss would have severely impacted that subsistence practice at the household level

Expanding English settlement into the interior and along the coast significantly reduced and eventually eliminated Mashantucket Pequot access to hunting grounds and coastal resources….2500 acres and quickly dwindled down to 200 acres in 1856.

Many men, women and children left the Reservation to work in English homes and many of their daily activities revolved around Euro-American subsistence and land use strategies. and other industries, such as whaling. SO ONLY SAMPLLING THE ONES LEFT.

The criteria according to which these ten sites were selected from the fifty-five post-Contact period sites were as follows: p 47

Framed structured, stone chimneys,

With the highly acidic soils within the Reservation boundaries, it is assumed that uncharred seeds would have decomposed rapidly.???? Within this investigation, it is assumed that the uncharred seeds present are more than likely associated with "modern" seed rain rather than the archaeological record under investigation.

Gremillion (1989) states that there is no simple correspondence between the cultural behaviors associated with plants and the types and portions of preserved plant remains that are recovered by archaeologists.

Typically archaeobotanists tend to identify a specimen to species level only when there is a high presence

fifty-three different plant types - ten plant types were identified to the family level, twenty-nine to genus level, and eleven to species level, three to the indeterminate level

Cornus sp. (cherry), *Gaylussacia* sp. (blueberry), *Carpinus caroliniana* (beech),

WHAT DOES IT MEAN WHEN WEEDS ARE IN A SITE?

decision-making

Unlike other Indigenous communities in North America, *Quercus* sp. (oak) and other mast types, do not appear to have been selected by the Mashantucket, except at very low increments at from 1675-1800 A.D. as seen in Figure 19. The general low ubiquity at these select sites could have a number of explanations: 1) a lack of access to this type of resource; 2) its low biological presence within this region of southeastern Connecticut; and 3) a cultural preference of the Mashantucket Pequot; or 4) it not being contrastive to colonial newcomers.????

Processed foods? Flour?

As noted in the ethnographic uses for each archaeological plant type, often the weedy seeds are utilized for immediate consumption while the fruits can be consumed on site or dried for future use (Appendix B).

during a time period in which Native Americans were being asked to convert fully to Euro-American farming technique.

managed those wild plant resources, possibly by harvesting and management for mast trees, and/or by propagating other wild-based plants such as weedy seeds and shrub-based fruits.

The Mashantucket Pequot not participating in the consumption of Tropical cultigen plants would have deeper meaning within the household and decision-making processes of the Mashantucket Pequot, perhaps signifying the beginnings of a shift within the traditional knowledge related to plants. DOES ABSENCE INDICATE LACK OF USE??

It appears that the archaeological evidence supports my expectation and suggests that the Mashantucket Pequot did not buy wholeheartedly Euro-American cultigens during this time period. They appear to rely more heavily upon tropical domesticates and wild

plants as the main source of food

"Indians have been much disturbed again by some of the people of Groton by their driving said Indians from their improvements and taking away their fields and fruit trees which for a long time they have planted and improved on at Mashantucket lands." Much of what was taken was considered their best agricultural lands

This demonstrates that medicinal plants such as tropical and Old world cultigens, nuts, shrubs fruits, and other wild plant varieties, were continually used and played a role in Mashantucket Pequot plant practices but *may be low frequency*.

. That is why the archaeological data and ethnographic information compiled are so important for reconstructing Mashantucket Pequot medical plant knowledge and use.

WHICH KNOWN PLANTS DON'T SHOW UP IN RECORD?

the Mashantucket Pequot remained autonomous
WHAT ABOUT HOMELESS PEOPLE? OR DIASPORA? OR CAMPS? EXCLUDED? If we went into a refugee camp wouldn't we see lots of use of traditional plants? Wouldn't marginalized people act that way? Isn't this denigrating? Chose to be different?

Of the 41 types categorized, 38 identified plant types are considered to be multi-habitat - more than two habitat categorizations. AND LITTLE CHANGE SO PERHAPS Not A GOOD INDICATOR?

Although there is no archaeological evidence of home gardens during the seventieth or eighteenth centuries, there is evidence of home gardens during the nineteenth and twentieth centuries.

the Mashantucket do not have the means or desire to construct a framed dwelling that is built to last, and with the lack of a cellar may not have the same capacity for storage as their Euro-American neighbors.

This supports my expectation that the Mashantucket Pequot maintain a high degree of mobility regardless of architectural features. The archaeological data presented in the land use section may corroborate that the Mashantucket Pequot within specific households were choosing to live within one area for only a short period of time not to overexploit and to retain to remain mobile with their uses of traditional plant-based resources within woodland, open-field, wetland and mixed/edge habitats.

it is difficult to discern whether the Mashantucket Pequot fully engage in Euro-American strategies of land use at all, which included fencing of lands and maintaining property distinctions among tribal members.

"We used to cook greens, and we used to get different things out of the swamps and the woods, picking different things." DIDN"T EVERYONE USE WETLANDS?
Within this region of southwest Connecticut, they appear to be invisible to the colonist

However, only five years after the fort occupation, *Corylus americana* (hazelnut) increases at the cost of *Carya* sp. (hickory) in 72-58 (Figure "Mast Standardized:).

The following is challenging

Within the archaeological and historical records, *Carya* sp. (hickory) is noted as the most important nut bearing trees in the eastern United States for Indigenous communities (Gremillion 1995; Bennett 1955). Is pattern of cultural use similar in New England? And if Carya sp. (hickory) is an important plant resource, then why did the Mashantucket Pequot mast use shift away from hickory after late seventeenth century? More upland, terrestrial environments, like Walnut Hill, West Half and South Hill were lost to the Pequot during the late seventeenth and early eighteenth centuries. This comprised over 3000 acres of exploitable land for trees, such as Carya sp. (hickory). It is possible that this shift in nutshell presence of Carya sp. (hickory) correlates to that land loss for the Mashantucket Pequot. The increase in the use of *Corylus americana* may correlate with the changing forest composition as early successional species, such as *Pinus strobus* (white pine), *Betula* sp. (birch) and *Acer maple* (red maple) become more abundant due to the rapidly changing southern New England landscape (Foster et al. 2008). It is important to understand that mast products were part of Indigenous communities diet and patterns of environmental strategies even when forced to become sedentary within the Reservation boundaries. The use of mast products is one way in which traditional ecological knowledge and plant practices may have been kept alive and passed from generation to generation between households at the Mashantucket Pequot Reservation during the late seventeenth to eighteenth centuries.

Women must have been an important contribution to keeping the Mashantucket Pequot plant interactions "Mashantucket Pequot" and traditional and autonomous from the Europeans, in the face of Euro-American strategies of "improving the land".