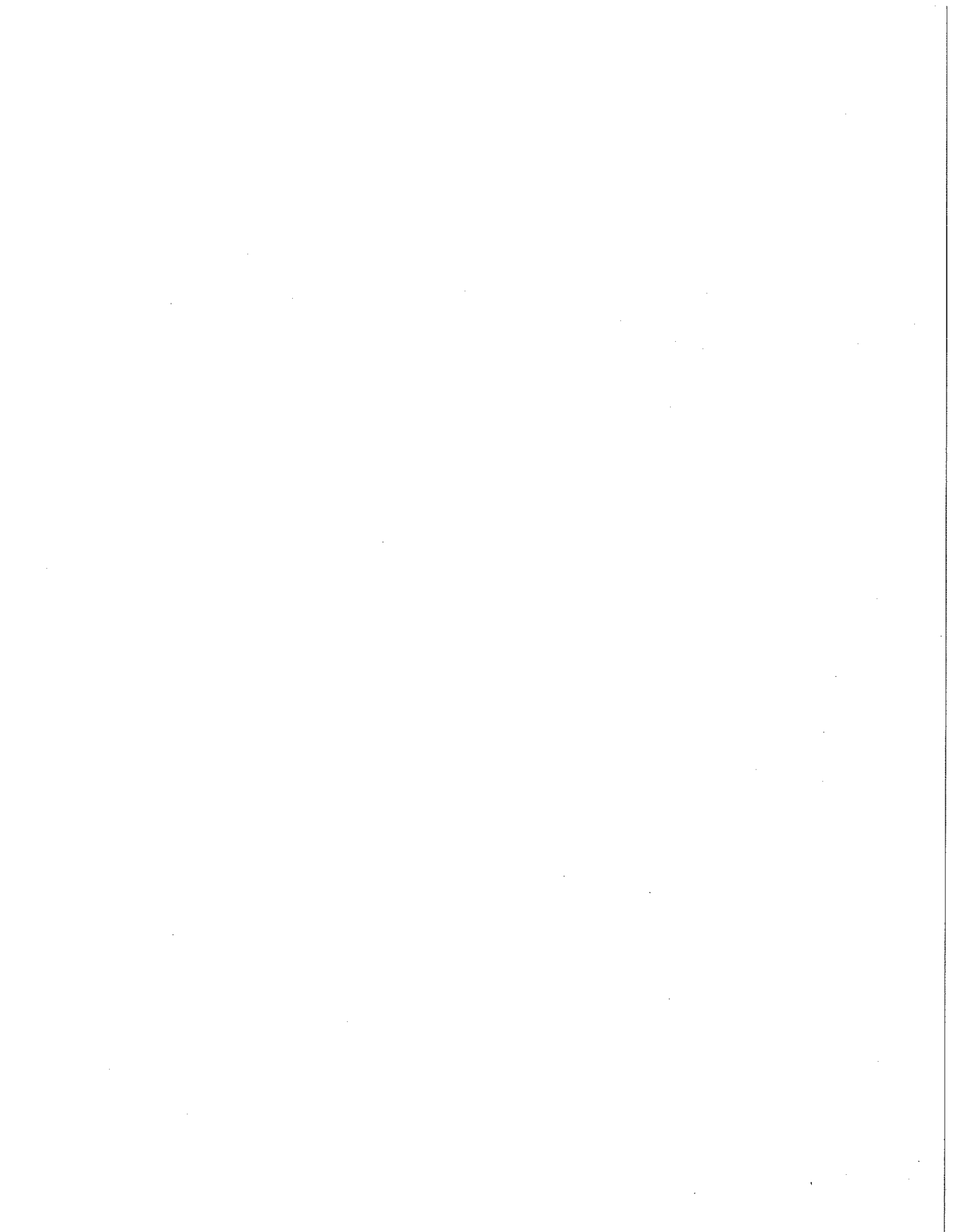


OBSERVATIONS ON METHODS OF COLLECTION, USE, AND SEASONALITY  
OF SHELLFISH ON THE COASTS OF MASSACHUSETTS.

By Elizabeth A. Little

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**INTRODUCTION**

In this paper I explore the species, the means and the seasons of collecting shellfish at Nantucket. Many of my findings are relevant to other coastal areas, and some differ from those described in the archaeological literature (Ritchie 1969; Perlman 1973; Braun 1972, 1974; Osborn 1977; Snow 1980; McManamon 1984). As my primary source of information, I have interviewed J. Clinton Andrews, who was for 30 years a commercial fisherman out of Nantucket. Ken Kelley of the Shellfish and Marine Department,

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Town of Nantucket, has contributed current data on shellfish at Nantucket, and D. Craig Edwards of the Zoology Department, University of Massachusetts, Amherst, has provided guidance to the current Latin names for shellfish. In addition to consulting ethnohistoric sources for eastern Massachusetts, current shell guides (Rehder 1981; Abbott 1974), and Euell Gibbons (1964), I have relied on my own experience with shellfish. My family has always experimented with wild foods, and I have personally gathered, cooked, and eaten quahogs, clams, oysters, scallops, sea urchins, periwinkles, mussels, whelk, surf clams, razor clams, blue crabs, and Jonah crabs on the coasts of Maine, Massachusetts, New York, and Virginia.

## SHELLFISHING

### THE RELATIVE IMPORTANCE OF VARIOUS SPECIES OF SHELLFISH

Because modern shellfish habitat and species abundance vary annually, we may not assume that they have not varied over the past 2500 years. In addition, archaeologists at Nantucket have seldom examined the chronology of deposition of shell middens, as Ritchie (1969) has done by studying individual components of middens at Martha's Vineyard.

With these limitations, the shellfish species found at most prehistoric middens in Southeastern Massachusetts are generally the same as today's commercial species. Figure 9 shows the modern habitat at Nantucket for quahogs, scallops, oysters, and clams, which, together with whelk, are today's commercially important shellfish. Figure 9 also shows the zone within one kilometer of this shellfish habitat containing all the prehistoric shell middens at Nantucket, some as old as 2500 years. Table 5 lists the shellfish species found at prehistoric sites at Nantucket, Martha's Vineyard, Connecticut, and Cape Cod, along with the percentages of archaeological sites containing each species. Quahog, oyster, softshell clam, scallop, and whelk lead both the prehistoric and modern lists.

Whelk, moon, and oyster drill are carnivores, with a preference for quahog, soft-shell clam, and oyster, respectively, and boat shells and limpets often live attached to other shells. Their presence in shell middens may be adventitious. Additional reasons for shellfish species being in shell middens other than as human food refuse will be discussed below. Therefore, although all of these shellfish are edible, their presence in shell middens does not prove that they were eaten.

Early observers of New England also noted the major shellfish species. John Brereton in 1602 in the islands south of Cape Cod, listed "Muscles, Wilks, Cockles, Scallops, and Oisters...exceeding good and very great" (Brereton 1602:7,13). William Wood (1865:35) in 1634, near Lynn, Massachusetts, created this minor classic:

"The luscious Lobster, with the Crabfish raw,  
The Brinish Oister, Muscle, Periwigge,  
and Tortoise sought for by the Indian Squaw,  
Which to the flats daunce many a winters Igge,  
To dive for Cocles, and to digge for Clamms,  
Whereby her lazie husbands guts shee cramms...."

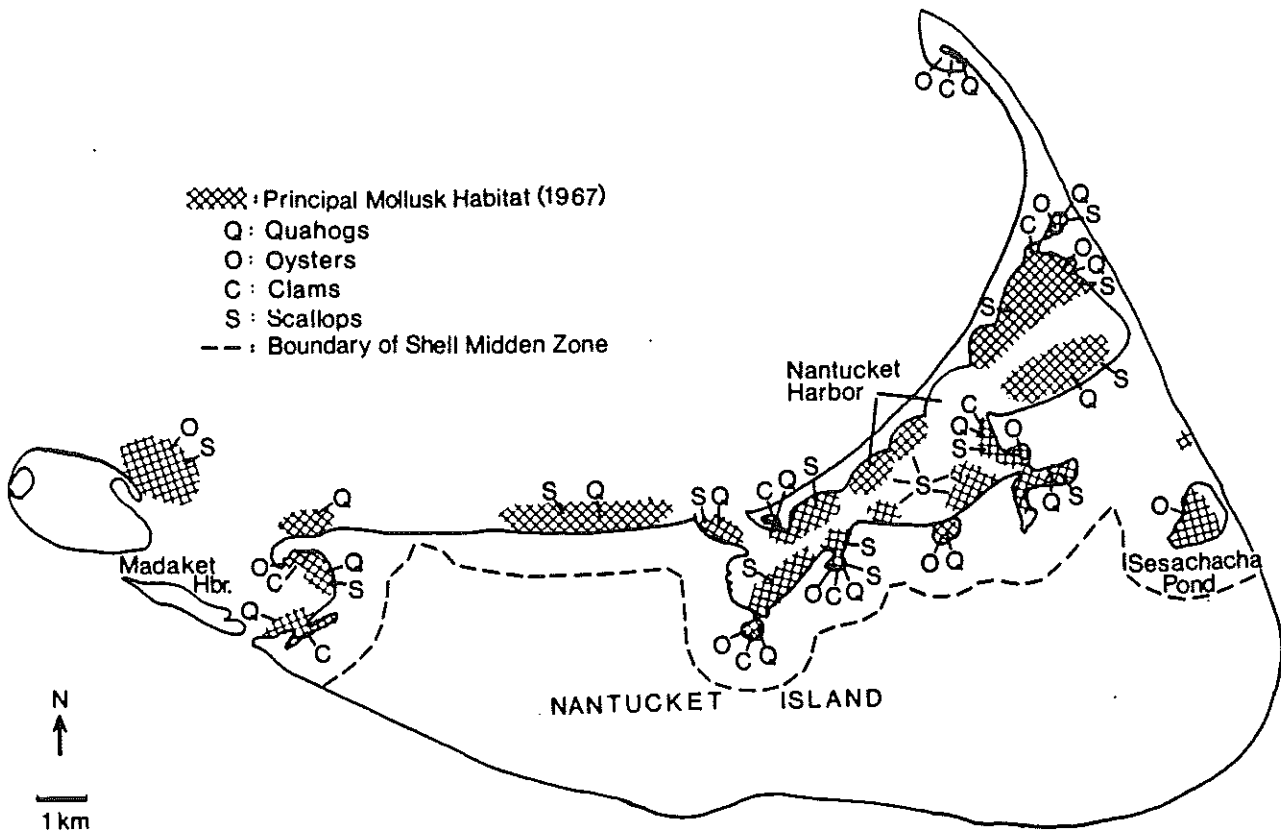


Figure 9. Principal shellfish habitat at Nantucket (after Zube and Carlozzi 1967:45; J. C. Andrews 1984, personal communication) and prehistoric shell midden zone adjacent to modern shellfish habitat.

That both Englishmen noticed mussels reflects the use of mussels for food in England. Brereton and Wood have named all of the important New England shellfish of Table 5 except quahogs.

#### NAMES FOR SHELLFISH

The Latin names for shellfish change with time and a common name may apply to several different species. I have revised the Latin names according to Abbott (1974), and record several cases of common name confusion. The cockle provides a good example of the problem.

Modern cockles in New England are described as "too small to be interesting, or they live in water too deep for us to get at them" (Gibbons 1964:151). Also, cockles do not occur in the Massachusetts shell middens under study here (Table 5; Barber 1982:60). I should like to make a case for cockles having been an early English name for quahogs (*Mercenaria mercenaria*).

TABLE 5  
 PERCENTAGE OF PREHISTORIC SHELL MIDDENS  
 CONTAINING VARIOUS SHELLFISH SPECIES

(+ = species present)

<u>Shellfish (after Abbott 1974)</u>	<u>Nantucket (52 sites)</u>	<u>Martha's Vineyard (19 com- ponents)</u>	<u>Connecticut (18 sites)</u>	<u>Cape Cod</u>
<u>Mercenaria mercenaria</u> (quahog)	77	89	94	+
<u>Argopecten irradians</u> (scallop)	48	84	56	+
<u>Busycon carica</u> & <u>B. canaliculatum</u> (knobbed and channeled whelk)	46	32	39	+
<u>Crassostrea virginica</u> (oyster)	44	79	94	+
<u>Mya arenaria</u> (softshell clam)	33	89	72	+
<u>Crepidula fornicata</u> (boat)	19	68	12	+
<u>Spisula solidissima</u> (surf clam)	10			+
<u>Polinices duplicatus</u> , <u>Lunatia triseriata</u> , <u>Lunatia heros</u> (moon)	8	37	6	+
<u>Mytilus edulis</u> (blue mussel)	6	16	0.3	+
<u>Geukensia demissa</u> (ribbed mussel)	4		6	
<u>Urosalpinx cinerea</u> (oyster drill)	4	11	6	+
<u>Buccinum undatum</u> (waved whelk)	2	5		
<u>Anomia simplex</u> (common jingle)	2			
<u>Ilyanassa obsoleta</u> (basket)	1	16	6	+
Limpet		5		
Ark & Razor clams			+	+
Periwinkle			+	

Data sources: Nantucket = Little 1979, 1984  
 Martha's Vineyard = Ritchie 1969  
 Connecticut = Warner 1972  
 Cape Cod = Speck and Dexter 1948

The English seem to have used the name cockle for many of the new shellfish genera which they found in exploring American shores (Gibbons 1964:151), and one could easily confuse a quahog with a Greenland Cockle (Abbott 1974:487). Since Brereton,

traveling south of Cape Cod, mentioned oysters, scallops, whelks, mussels and cockles, but not clams and quahogs, his cockles could have been either clams or quahogs. Wood, north of the Cape, mentioned oysters, clams (presumably *Mya*, the chief bivalve north of Boston [Braun 1974; Barber 1982]), surf clams, mussels and cockles, but not quahogs, scallops, and whelks. Thus, since Cape Cod forms the northern boundary for most scallop and whelk (Belding 1909), cockles could not have been soft-shell clams or surf clams, nor could they have been scallops or whelk. Cockles could therefore have been Wood's and Brereton's name for quahogs.

Support for the hypothesis that the early English called quahogs "cockles" is provided by the 1635-1643 records that one dived for quahogs (Williams 1963), and one dived for cockles (Wood 1865). Were there quahogs north of Cape Cod in the seventeenth century, as Wood's (1865) report implies? John Josselyn, who had lived on the coast of Maine, reported in 1672 that white and blue wampum (the blue implicates the quahog) were made from a kind of "coccle" (Josselyn 1972:36), which doesn't answer our question, but definitely connects cockles with quahogs.

On the other hand, Lescarbot in 1604-1607 reported from Maine that "great sea cockles, called vignols, like snails..." were used by the Indians south of Cape Cod for making beads (Ceci 1977:169). Although the French word "coquille" translates as shell or shellfish in general, and thus differs from the English species name cockle (OED 1971:575), Lescarbot clearly meant Busycon (whelk), which were indeed used for beads and white wampum (Williams 1963:140). In modern Massachusetts Buccinum (waved whelk) and moon shell snails have also been called "cockles" (J. C. Andrews 1982, personal communication; Belding 1909).

I stand by my hypothesis that cockle meant quahog for the English in the seventeenth century. Discovery of both cockles and quahogs in the same explorer's report would falsify the hypothesis (D. C. Edwards 1984, personal communication).

#### SHELLFISH SPECIES AT NANTUCKET

Let us now consider some details of the gathering and use of individual shellfish species.

Quahogs (*Mercenaria mercenaria*) are an American shellfish (Grzimek 1974:179) whose range is from Texas to Cape Cod, with minor amounts north to the Gulf of St. Lawrence (Rehder 1981). Although Ritchie (1969:216) stated that at Martha's Vineyard quahogs lie above the bottom, easily visible under water, at Nantucket the shellfish live almost entirely just under the sand and mud surface and are often hidden by seaweed. According to J. C. Andrews (1985 personal communication), Ritchie may have observed quahog habitat immediately after an eel grass invasion, when, because of the thick growth of the weed, quahogs will lie above the bottom. At Nantucket they occupy a range from high tide level to a depth of 15m. They can be gathered by men, women, and children any time of the year by feeling under the sand and mud with their hands or feet; gathering would be cold in winter water (Little family; J. C. Andrews 1983, personal communication). K. Kelly (1984, personal communication) notes that "after freeze-ups they sometimes pop out in large numbers," and storm waves occasionally cast them up on beaches (Little family; Figure 10).

Roger Williams (1963:140), in 1643 at Narragansett Bay, stated that the Indians "wade deepe and dive for" this "little thick shell-fish", called poquauhock, which

implies a certain resource depletion at that time and place. After eating the meat, the Narragansett Indians would break out of the shell about a half inch of "blackie" (purple) shell, of which they made their purple money (wampum) (Williams 1963:140); from this use came the shellfish's Latin name, *Mercenaria mercenaria*. At Nantucket, quahogs were sometimes called "pooquaws" (Trumbull 1902:234), and on the Cape and Islands are still called quahogs. At Lynn, Wood (1865:35) described Indian squaws diving for what he called cockles in the winter. Elsewhere at times the quahog has been called "Hens" (Williams 1963:140), and "hard shell" or "chowder clam," "cherry-stone," or "littleneck," especially around New York City.

J. C. Andrews (1983, personal communication) notes that quahog shells in Nantucket Harbor have a greater depth of purple color than those from Madaket Harbor. Quahogs near Chatham were said in 1870 to have had little or no purple color (Gould 1870:134), and Falmouth was called Suckanusset, which is said to mean "where the black wampum is found" (Zinn 1984:8). Here is an environmental variation which would have had a cultural effect. Where are the quahogs with the most purple found, and why? Another issue raised here is color-blindness (B. Simon 1985, personal communication).

Scallops (*Argopecten irradians*) spend the warm months protected in eel grass in deep water. In the fall, eel grass leaves die, and, during the first large fall or winter storm, great quantities (wagon loads [Belding 1909:85] or tons [D.C. Edwards 1984, personal communication]) of scallops are washed ashore in windrows (Fig. 10), and would have been a major, if unpredictable, resource. These observations conflict with Perlman's (1973) assertion that summer was the season for gathering scallops, and raise questions about Braun's (1974) suggestion of the use of weirs. Small hand nets are useful for collecting scallops in the water. Scallops became scarce with the disappearance of eel grass in the thirties (Ford 1982:128; Setchell 1929), and I can find no Massachusetts word for them. Their use as a food fluctuates also. The Nantucket scallop industry started only in 1881 (Nantucket Argument Settlers 1966:51; Belding 1909:111), and Gookin (1951:60) reported that they were used only for fertilizer in the early nineteenth century on Martha's Vineyard. Scallops have a two year lifespan. Scallop shells, which are fragile, are found in very minor quantities in prehistoric Nantucket shell middens.

Channeled and knobbed whelk (*Busycon canaliculatum* and *Busycon carica*), found between Cape Hatteras and Cape Cod (Rehder 1982), feed chiefly on quahogs. They spend the winter in deep water and at Nantucket come inshore near low tide level in early summer (late June) to spawn. Some are still around through October, a few are found year round, and storms occasionally wash them ashore (K. Kelley 1984, personal communication; J. C. Andrews 1982, personal communication). Whelk is tasty if tough, and at present a commercial fishery at Nantucket supplies the Italian food market in New York City. The shells, rosy or peach colored inside, are re-used by hermit crabs, and sometimes are carried inland by seagulls and dropped on roads or on the few rocks at Nantucket. Fortunately for archaeology, the abundance of seagulls is a post 1920's phenomenon at Nantucket, according to J.C. Andrews.

Whelk shells, either in a layer, as one or two whole shells, or as worked columella, have been found associated with 11 prehistoric Nantucket burials (Bullen and Brooks 1948; Anderson 1977; B.H. Stockley 1978, personal communication). A Nantucket Indian legend recounts that the body of a malicious sorcerer would not stay buried until a whelk shell was placed in each of its hands (Jenks 1827).



## AREAS WHERE SHELLFISH ARE CAST ASHORE

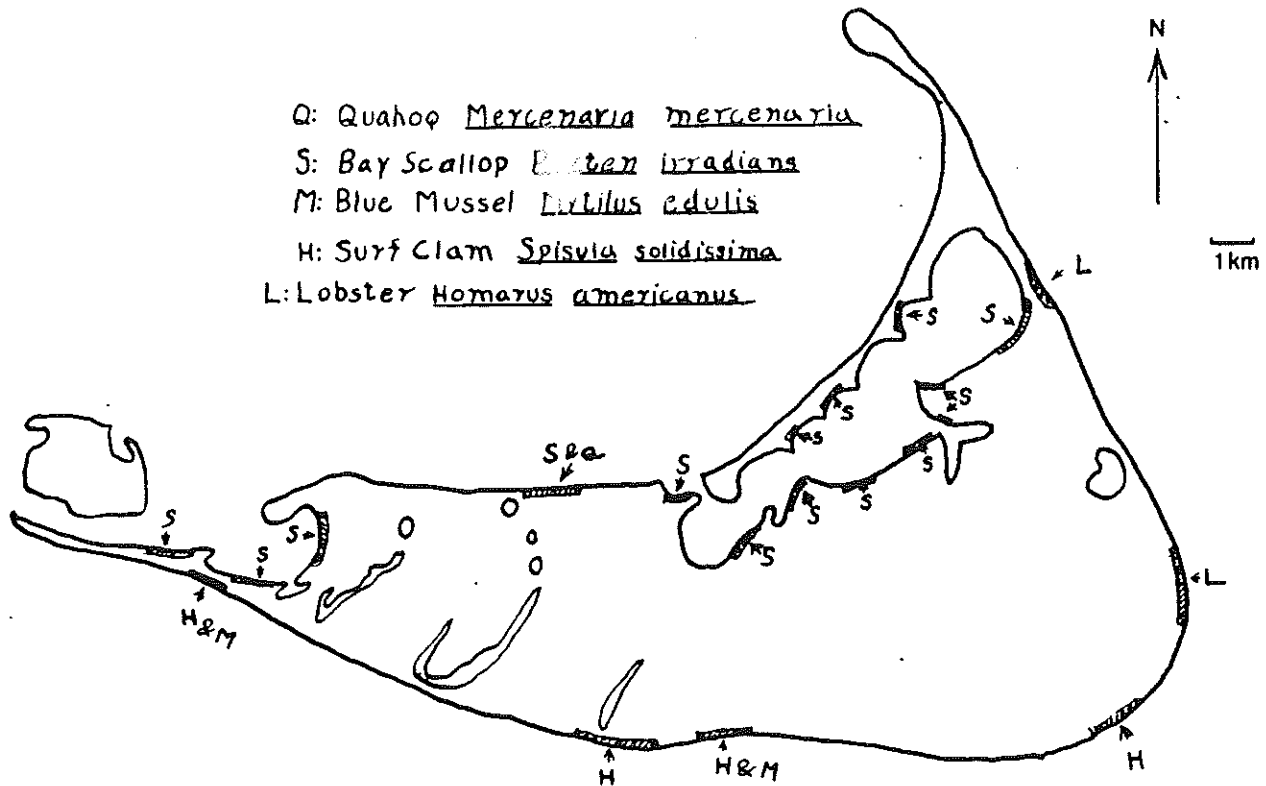


Figure 10. Areas along the shores of Nantucket Island where Quahogs, Bay Scallops, Surf Clams, Blue Mussels, and Lobsters are most often cast ashore by storms (map drawn by J. Clinton Andrews, 1984, based on data from his records, 1947-1985). "The shellfish washing up on the south shore might be anywhere, but they concentrate where I have marked. These concentrations shift along shore but should usually be in the general areas. Those in the harbor would only vary a few feet" (J. C. Andrews 1984, letter).

In early historic times at Long Island, NY, and southeastern New England, whelk, also called "periwinkle" or meteahock, was gathered in summer for winter production of white wampum (Williams 1963:140,179,180; Ceci 1977). Pits filled only with whelk shells have been found at Nantucket and Long Island (Nantucket Historical Association Files; Ceci 1977).

Oyster (*Crassostrea virginica*) is to many the tastiest shellfish of all. Avoiding oyster in months without r's is a rule (Gibbons 1964:13) which applies to European oysters; ours, which grow on firm, clean surfaces from mid-tide level to 12 meters deep (Belding 1909; Rehder 1981), are available and edible in every month (J.C. Andrews

1983, personal communication; Little family). Its abundance at Nantucket fluctuates; it is not a major resource today, but oysters were abundant in the past, on the evidence of oyster shell frequency and density in prehistoric shell middens. Although Sesachacha Pond was a freshwater pond in 1909 (Belding 1909), its brackish water today supports live oysters seven meters below the pond surface. Ancient shells dredged up from the pond bottom are often of giant size. Because of the great amount of oyster shell in middens on the pond borders, J. C. Andrews believes that Sesachacha Pond may once have had a natural opening to the sea. At one of these sites, a radiocarbon date of 1680±80 B.P. was obtained (Little 1984). The name for oyster in Massachusetts, apwonnah or opponenauhock, meant "the shellfish which are for roasting" (Trumbull 1902:304; Cotton 1830).

Softshell clams (Mya arenaria), which are less common in middens on Nantucket than on the Vineyard, are not a major shellfish species at Nantucket today, but there is a town-regulated winter family clamming season, and there has been commercial harvesting for local consumption in the past (Andrews 1983, personal communication). The Littles (at Long Island), and J. C. Andrews (at Nantucket) consider softshell clams of late winter and early spring to be superior in quality to those of summer and fall, but clams are available all year round between mid-tidal level and one meter below. Although Ritchie (1969) called them "long clams", on Nantucket, clams are called "clams", "softshell clams", or "steamers", and Olney Dunham of Nantucket called large Mya "fryers". At Nantucket clams were sun-dried by the original inhabitants, and 40 sun-dried clams strung on a string were used for money, equivalent to one "copper" (Crevecoeur [1782] 1971:101,106; Mourt 1832:51). Roger Williams (1963:139) called them "a sweet kind of shellfish, which all Indians generally over the Countrey, Winter and Summer delight in: and at low water the women dig for them: this fish, and the naturall liquor of it, they boile, and it makes their broth and...their bread seasonable and savory". Their Indian name was sickissuog, or sukkissuog, "they spit or squirt" (Trumbull 1902:234; Cotton 1830).

At Lynn in 1634, Wood reported that the Indian squaws in winter used "to digge for Clamms" (1865:35), and that "Clamms or Clamps is a shel-fish not much unlike a cockle, it lyeth under the sand, every six or seaven of them having a round hole to take ayre and receive water at. When the tide ebs and flowes, a man running over these Clamm bankes will presently be made all wet, by their spouting of water out of those small holes: These fishes be in great plenty in most places of the countrey" (Wood 1865:37).

Boat shells (Crepidula fornicata), although small, are common and very tasty. Daniel Haynes of Nantucket calls them "sweet meats", and the Maria Mitchell Association recommends their use as salt water aquarium fish food. They attach themselves to the shells of oysters and scallops (and not to shells of the subsurface dwelling clams and quahogs) (J. C. Andrews 1984, personal communication). Whether boat shells arrived at middens as hitch hikers or were gathered as food is an open question. J. C. Andrews reports places on the harbor where a large number of boat shells, some alive, wash up regularly. If Indians ate them, he would expect to find occasional pure boat shell midden patches, but such deposits have not been reported as yet.

Surf clams (Spisula solidissima) are difficult to find at Nantucket, although the shells are common on the South Shore of the Island. After fruitless snorkling off the South Shore by my family in the summer, we finally asked Jose Reyes of Nantucket, who told us that surf clams are washed up (Fig. 10) by fall and winter storms. Finally, a southerly hurricane of August 1977 washed some ashore for my family, and

they tasted as delicious as Euell Gibbons (who calls them also Hen Clams) had promised (Gibbons 1964). Wood (1865:38) mentions clams as "big as a pennie white loafe, which are great dainties amongst the natives", and reported that the sea, at Nahant, "after stormes casts up great store of great Clammes, which the Indians taking out of their shels, carry home in baskets" (Wood 1865:44).

Although these shells frequently appear in small numbers in Nantucket middens at least four kilometers from the beaches where the clams were probably cast up and removed from their shells, I do not think the middens give evidence for the use of surf clams for food. Barber (1982:60) proposes that since cod stomach contents often include surf clam shells, prehistoric use of cod can account for surf clam shells in middens. Surf clam shells might also have been used as tools (hoes) or containers, as they are used today for digging holes at the beach and for soap dishes or ash trays.

Moon snail (Polinices duplicatus, Lunatia heros, or Polinices triseriata) shells are rare but present on archaeological sites (Table 5). Moon snail shells, like whelk, provide hermit crab homes, and D. C. Edwards (1984, personal communication) suggests that drilled holes in moon shells in middens would imply that Indians harvested hermit crabs. However, since few moon shells in middens are whole, prehistoric Nantucketers appear to have broken the shells for access to the snails. Most moon snails south of Cape Cod live in deep water and come inshore to spawn and eat clams in the summer, but some can be found most of the year at Nantucket (Rehder 1981; Edwards and Huebner 1977; Ken Kelley 1984, personal communication). Belding (1909) called them "winkles" or "cockles".

Blue mussels (Mytilus edulis) grow on rare boulders in the Sound and harbors at the mid-tidal level, or they grow in large clusters in water as deep as 12 meters near shoals off the south shore (J. C. Andrews 1983, personal communication). After storms, clumps of live mussels sometimes wash ashore (Fig. 10). Although the shells are rare in middens (Fig. 9), at least two middens consisting wholly of mussel shell have been reported at Nantucket (Nantucket Historical Association Files). Mussels made the Pilgrims sick (Mourt 1802:205), and have been served in New England restaurants only for the past 20 years.

The ribbed mussel (Geukensia demissa), formerly Volsella plicatulus (Ritchie 1969), grows on mud or peat in salt marshes or bays, and single shells commonly appear in midden debris.

The habitat of the waved whelk (Buccinum undatum) south of Cape Cod is 8 or 9 km offshore in deep cool water. Hence, while hermit crabs occasionally use the shells, the snail is seldom seen alive at Nantucket. This is a pity, because this gastropod is the common edible whelk of Britain (Rehder 1981; Gibbons 1964), and is sweet and delicious (Little family). The waved whelk is rare but present in prehistoric Nantucket middens (Table 5).

Species which appear infrequently in middens can sometimes provide evidence of the prehistoric environment. The Atlantic Oyster Drill (Urosalpinx cinerea), a major carnivore preying on oysters, lives in or near oyster beds; the Common Jingle Shell (Anomia simplex), a bivalve, lives attached to other shells or hard substrate; the Basket or Eastern Mud Whelk (Ilynassa [or Nassarius] obsoleta) lives on mud flats; limpets live on rocks; ark and razor clams live in sand or mud, but the shells of the razor clam are too fragile to survive and this rapid digger is difficult to capture. The periwinkle, a gastropod which lives on rocks, must be identified carefully because,

like cockle, the name has been used for many things, from *Busycon* (Williams 1963) to a possibly introduced European snail, *Littorina littorea* (Barber 1982:21,61), or a native American snail, *Littorina obtusata* or *L. saxatilis*.

## CONCLUSIONS: METHODS AND SEASONS

### METHODS OF GATHERING SHELLFISH AT NANTUCKET

Hand collecting, feeling with one's feet, diving, using collecting nets, digging, or raking (Ritchie 1969; Braun 1974; Rainey 1956) are all possible methods of gathering shellfish in the shallow waters of Nantucket. In addition, as became increasingly apparent during the research for this paper, scallops, surf clams, and mussels primarily, but also whelk and quahog, can be gathered live from ocean and harbor beaches where they have been cast up by storms. With the exception of scallops, most of these shellfish close up their shells when disturbed, and can survive out of water for several hours or more. Whales (Little and Andrews 1982), fish, and lobsters are also liable to be washed up on certain Nantucket beaches, dazed but not necessarily dead (J. C. Andrews 1984, personal communication). Despite Osborn's (1977) skepticism, a seafood harvester who collects these gifts of the sea promptly after a storm, before birds or insects get to them, increases the quality and decreases the cost of his food.

The manner of shellfish gathering can affect the species composition of shell middens. An intensive search by several people in a productive habitat for a certain species of shellfish during the proper season should result in a bucket or so of one species for an hour of work. The result in a shell midden would be a patch of shells of one species, with perhaps a predator shell or two and some hitchhikers. Such patches of single species are common in prehistoric shell middens (Speck and Dexter 1948; Rainey 1956; Ritchie 1969; Warner 1972; Little 1983; McManamon 1984). At the other end of the continuum, foraging for anything edible a group can find would provide a variety of shells for the midden, not necessarily all from the same habitat. This method implies either that bouillabaisse (a soup of many seafoods) is on the menu, or that there is enough stress on the foragers or the shellfish to require an extensive search with few finds of any one species.

### SEASONS OF GATHERING SHELLFISH AT NANTUCKET

Since it is possible to obtain a few of most of these species at any time of year, their mere presence in a shell midden does not give evidence for the season of collection. However, Table 6 shows the easiest time for collecting a given species in quantity at Nantucket without the use of high technology. Oysters, softshell clams, and quahogs would be available all year round, although quahogs and possibly oysters would be easier to gather in summer. Most whelk would be available in the summer. Scallops, surf clams, and mussels are most easily gathered near shore after the first big storm after a period of calm, which usually occurs in the fall and winter. Quahogs and whelk can also be washed ashore by storms. The seasons underlined for certain species in Table 6 are those for which ethnohistoric evidence of Indian shellfishing has been presented here. Note that they do not conflict with our modern data. Thus, harvesting shellfish any time during the year, with limited seasons for certain species, has been reported today at Nantucket and is supported by ethnohistorical evidence.



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