

## Chapter 12

# *Developing Models of Settlement for the Florida Gulf Coast*

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One puzzle with which archaeologists struggle is determining when people began to be less mobile and more sedentary. In many parts of the world sedentism is linked to plant domestication. Residential sedentism without domestic plants is less frequently reported. However, Calusa communities on the southwestern Gulf coast of Florida in the 16th century A.D. exhibited many features considered hallmarks of sedentary societies: permanent structures, storage facilities, large villages, and large-scale public works in the form of shell and earthen mounds. The Calusa political system maintained hegemony over the entire southern tip of the peninsula (Widmer 1988). Although the Calusa lived in permanently-occupied villages, domesticated plants were not a significant food source (Scarry and Newsom 1992). Instead, Calusa economies were based on the bountiful, non-domesticated plants and animals of Florida's coastal estuaries, marshes, and swamps. When did this tradition of sedentism in the absence of a domestic food base appear and how was it supported? This study elaborates upon evidence for early sedentism on the southwestern Gulf coast of Florida and reveals two distinct patterns of bay scallop (*Argopecten irradians*) collection.

### EVIDENCE FOR SEASON OF USE

Traditional markers of sedentism present difficulties for interpreting archaeological sites in southwestern Florida (Figure 12-1). "Permanent structures" made of leaves and branches degraded quickly and subterranean storage pits were less

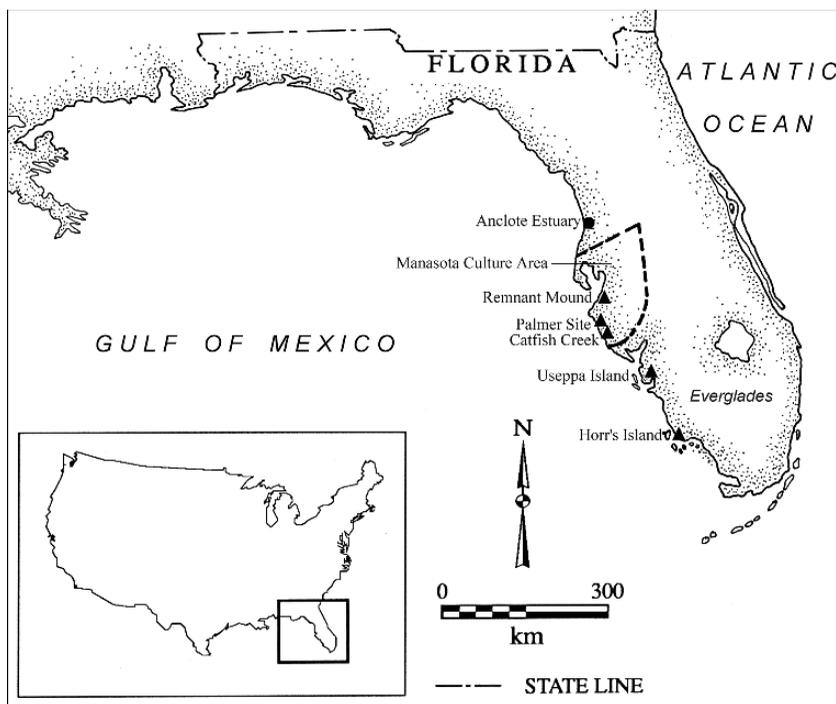


Figure 12-1. Archaeological and other locations in south Florida mentioned in text.

frequently used in Florida's damp soils than in drier areas of the Southeast (Milner 2004:33, 37, 183; Smith 1986:17, 54; Steponaitis 1986:375, 381). Millennia of shellfish accumulations obscure site boundaries, making it difficult to distinguish between refuse of brief camping episodes and that of large, permanent villages. Large-scale public works such as ceremonial mounds, hallmarks of the sedentary and hierarchically-organized Mississippian farming societies of the interior Southeast, traditionally are interpreted on the Florida Gulf coast as refuse rather than architecture (e.g., Bullen and Bullen 1976:20; Houck 1996:32; McMichael 1982; Russo 2004:59–63). Consequently, distinguishing permanent settlements from semipermanent base camps or frequently revisited collection camps is problematic.

Fortunately, many of the animal remains at these sites contain information about the season in which they were harvested, providing a basis for understanding a community's residential pattern. If the remains provide evidence that a site was occupied during more than one season, then the likelihood that the site was a single-season camp is reduced. The more collection seasons identified, the stronger the support for an interpretation of year-round occupation (i.e., permanent settlement), particularly if such evidence is derived from several organisms.

Assessing season of death most commonly is based on correlations of time with body size, incremental growth structures, and chemical properties in skeletal remains (e.g., Hudson et al. 1976; Rhoads and Lutz 1980). Quahogs (*Mercenaria* spp.; Quitmyer et al. 1997), coquina (*Donax variabilis*; Jones et al. 2004; Russo and Ste. Claire 1992), bay scallop (Russo and Quitmyer 1996), and the oyster parasite, the impressed odostome (*Boonea impressa*; Russo 1991b) often are used to estimate seasonal collection episodes at Florida sites.

Seasonal site occupation and seasonal patterns of resource procurement (e.g., shellfish collection) represent two different aspects of human behavior (Deith 1983:423; Quitmyer et al. 1997). Humans are broad-based omnivores who use many plants and animals seasonally. A single or multiple seasonal indicator may be sufficient to identify when a specific site was occupied in the annual cycle, but may not be sufficient to characterize that site's full role within the annual cycle or within the larger, regional settlement pattern. Redundant sampling and repeated analyses of collections representing the full range of site types are necessary to fully resolve the question of seasonal site occupation.

## BAY SCALLOP SEASONALITY

Season of death for animals that grow throughout their lives may be estimated by correlating growth increments or the sizes of archaeological specimens with those of modern populations at specific times of the year (e.g., Claassen 1982; Clark 1979; Clark and Lutz 1982; Quitmyer et al. 1997). The size-correlation approach assumes that most individuals of the taxon reproduce during a specific season and grow at a predictable rate that can be equated with size at a specific time in the annual cycle. Animals most easily studied in this way are those that live a single year.

One such species is the bay scallop, which in Florida waters generally lives only one year (Austin and Russo 1989; Quitmyer 1992, 1998; Russo 1998). The annual cycle commences with fall spawning, but little or no growth occurs during the winter. Winter bay scallops average less than 20 mm in height (Figure 12-2, see methods). Rapid growth begins as water temperatures warm in early spring (March) and continues through June, by which time average shell height reaches 50 mm. Growth continues through September until spawning occurs in October, when shell height reaches an average of 60 mm. After spawning most bay scallops die. Mass mortality of year-old bay scallops in the fall means that few larger bay scallops are available during winter months. At a given time, then, the mean size of most bay scallops is predictable. By calculating the mean size of bay scallops from an archaeological deposit and comparing it to known seasonal size classes, the time of year that the bay scallops were collected can be estimated.

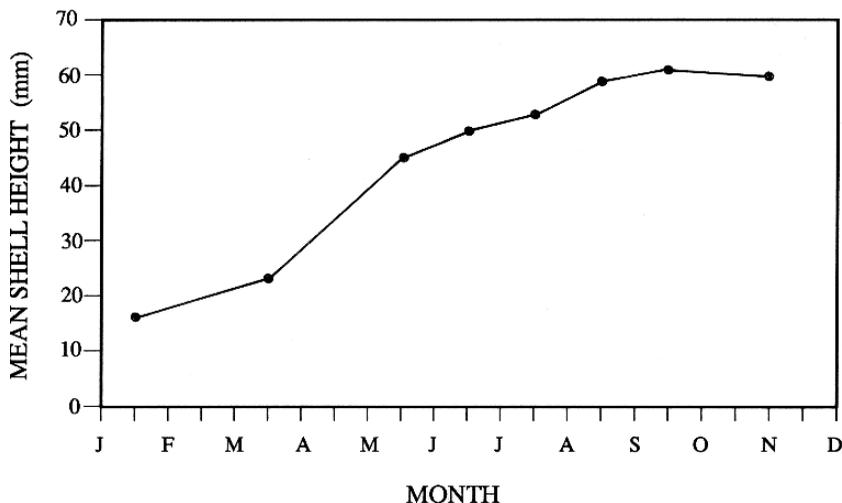


Figure 12-2. Monthly mean shell heights of modern bay scallops (*Argopecten irradians*) collected from Anclote estuary, Florida (after Barber and Blake 1983). The sample size is unknown.

## METHODS

In this study, bay scallop (Russo and Quitmyer 1996) and quahog (Quitmyer et al. 1997) season of death estimates are combined with the sizes of fishes, the presence/absence of loons (*Gavia immer*), and nonmetric markers of seasonality and settlement permanency to examine the character of year-round coastal settlement achieved in southwest Florida. The assessment of seasonal periodicity derived from these organisms is elaborated upon by reference to capture technologies, settlement patterns, population increases, and political boundaries.

Valve height is measured from the umbo to the ventral margin (dorso-ventrally). Occasionally, height and length (the anterior to posterior dimension) are confused in the literature (see Broom 1976; Perlman 1973), but the two measures are nearly identical on a given valve (Bushnell 1965). When an archaeological sample did not provide a sufficient number of whole valves to be statistically reliable (e.g., 30 or more), the hinge heights of fragmentary bay scallops were measured and appropriate allometric formulae applied to estimate shell size (Reitz et al. 1987; Russo 1991a:506). When selecting random samples from larger collections, measurable hinges from both whole and broken valves were selected so no biases resulted from measuring only whole valves. These methods are described in greater detail elsewhere (Quitmyer 1998; Quitmyer et al. 1997; Russo 1991b, 1998).

Four cultural periods represented by five Gulf coast archaeological sites are considered in this case study. The Preceramic Middle Archaic (5000–2000 B.C.) and the Late (Ceramic) Archaic (2000–500 B.C.) periods are collectively termed the Archaic. Their discussion is followed by the Manasota (500 B.C.–A.D. 900) and Safety Harbor (A.D. 900–1500) periods. The Archaic sites are located on the lower Gulf coast of the Florida peninsula, whereas the Manasota and Safety Harbor sites are located in the Manasota culture area to the north (Figure 12-1).

## ARCHAIC SEASONALITY AND SETTLEMENT

Rising sea levels during the mid-Holocene submerged and destroyed many, if not most, Gulf coast Archaic sites (e.g., Dunbar et al. 1992; Faught and Donoghue 1997; Faught and Latvis 1999) and few archaeological sites occupied before 2500 B.C. are found along Florida's present shoreline. For years, archaeologists interpreted the few surviving Archaic sites as special-purpose or seasonal encampments of mobile hunter-gatherers who otherwise occupied the interior non-coastal environments of the peninsula (Cockrell 1970; Milanich and Fairbanks 1980:29; Widmer 1988:211). Widmer (1988) hypothesized that prior to 2500 B.C., when the rising Gulf stabilized near its current level, the coastal zone was not sufficiently stable to support even "semipermanent" settlements. In the absence of biological evidence, archaeologists speculated that shellfish must have been a cold-weather resource (e.g., Bullen and Bullen 1961; Milanich and Fairbanks 1980:150). Shellfish were presumed to be a poor nutritional source or otherwise inedible during the summer because of diseases and parasites. Consequently, they were interpreted as a hard-luck food eaten in what were presumed to be the lean months of winter when presumably preferred foods were unavailable. Thus, the few Archaic archaeological shell deposits on Florida's Gulf coast were interpreted as seasonal camps left by people from the interior of Florida incapable of living on the coast on a year-round basis. The invention of pottery in the Late Archaic period, it was thought, facilitated permanent settlement on the coast by providing vessels for cooking and storing seafood, thus accounting for an increase in sites at the end of the Archaic period (Sassaman 1993:216–217).

The large sizes and seasonal signatures of some Archaic sites (Russo 1991a, b, 1992, 1998, 2004; Russo and Heide 2001, 2004; Russo and Saunders 1999; Saunders 2004) require reconsideration of this model of Archaic coastal settlement and subsistence patterns. Instead of seasonal migrations from the interior, this evidence indicates that the productive estuaries were exploited from large, permanently-occupied coastal villages as well as from smaller logistical foraging camps during the Archaic period (*sensu* Binford 1980; Quitmyer and Massaro 1999; Russo 1991a, 1998; Torrence 1999). Evidence for such a pattern is found at one such village on Horr's Island.

### Horr's Island: A Permanent Archaic Village

The Horr's Island site (8Cr208) is a Preceramic Late Archaic village and ceremonial mound complex occupied circa 3000–2400 B.C. (Figure 12-1). The village consists of a large (150 m long) U-shaped ring of shell up to 5 m high. Associated with the ring are three conical, ceremonial shell/sand mounds, the tallest rising over 6 m above the surrounding village (Russo 1994, 1998). This village/mound complex is over a kilometer long and has yielded evidence (post molds) of numerous domestic structures and hearths. The site has an elaborate shell tool assemblage in contrast to the typical stone assemblages associated with interior groups; stone resources are not available on the coast. The monumental architecture and abundant utilitarian artifacts indicate diversified, long-term maintenance activities typical of permanently-occupied villages.

The site was originally interpreted as a series of winter encampments on the assumption that shellfish were a cold-weather resource (McMichael 1982). To test whether the site was a seasonal encampment or year-round village, seasonal indicators were examined. Although scallops were recovered throughout the site, only one feature produced sufficient numbers of valves to assess season of collection. An average height of 59 mm indicates that most of these scallops were collected in the late summer. Because scallops of this size are strictly a warm-weather resource, they could not, in and of themselves, be used to differentiate between a single season of occupation or year-round occupation. When the scallop data are combined with seasonal data for quahog, oyster (*Crassostrea virginica*), and several species of fish (Figure 12-3), however, it appears that animals collected from every season of the year are represented. Quahogs were predominately collected in the spring and early summer and, to a lesser extent, in the fall and winter; oysters and scallops were collected in the late summer and early fall. The small sizes estimated for some fishes indicate that hardhead catfish (*Ariopsis felis*) and pinfish (*Lagodon rhomboides*) were caught in the fall and summer and thread herrings (*Opisthonema oglinum*) were caught in the winter months (Russo 1998).

These animals were not the only ones consumed at the site. The species list from Horr's Island is the richest of any Archaic faunal collection from Florida (Russo 1991a). This richness, combined with data from the seasonal marker species, provides a compelling case for the year-round occupation of Horr's Island. The case for sedentism is supported by plant remains collected during multiple seasons (Newsom 1991), ceremonial mounds, numerous residential structures, and extensive village size. Together the seasonal measures in support of a year-round interpretation correct the previous interpretation that the Horr's Island site was a winter encampment and shellfish were a winter resource.

### Useppa Island: A Seasonal Archaic Camp

Useppa Island is a small barrier island north of Horr's Island (Figure 12-1). It contains four shell middens (8LL51) ranging in size from 50 m to over 150 m

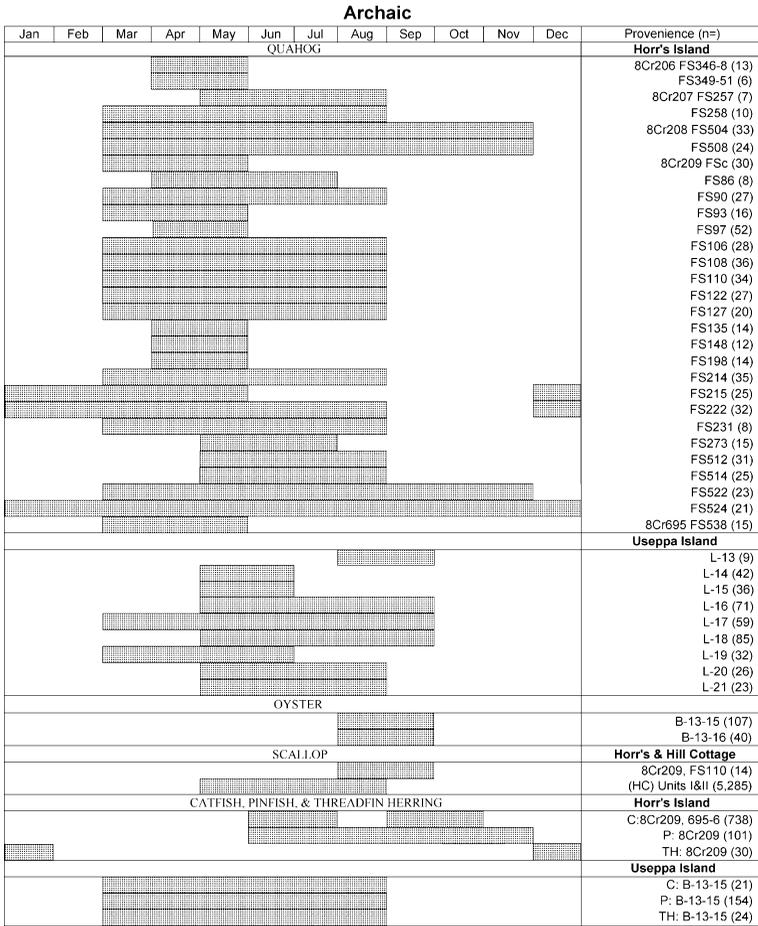


Figure 12-3. Season of death for selected animals from Archaic period sites in south Florida (Horr's Island [Russo 1991a]; Useppa [Quitmyer and Massaro 1999]) and the Manasota culture area (Palmer Site-Hill Cottage Midden [Bushnell 1965]).

deposited during both the Preceramic and Ceramic Archaic periods (Marquardt 1999:77). Based largely on a preponderance of whelk (*Busycon* spp.) remains in all stages of reduction and evidence that the quahogs and fishes were taken in the spring and summer (Figure 12-3), the site is interpreted as an Archaic seasonal camp where whelks were collected and made into tools (Quitmyer and Massaro 1999:122–123; Torrence 1999:73–74). The site may have been a logistical foraging camp related to the permanent settlement at Horr's Island (*sensu* Binford 1980; Russo 1991a:487; Torrence 1999:72).

### Palmer Site-Hill Cottage Midden: An Archaic Sedentary Village?

The Hill Cottage midden component of the Palmer site (8SO2) (Figure 12-1) is a Late Archaic shell midden occupied between 2150 and 1400 B.C. (uncorrected) (Bullen and Bullen 1976). The midden is 150 m long and forms a U-shaped ring similar to that at the Horr's Island village.

Bushnell (1965) found significant changes in the size of scallops recovered from Hill Cottage by Bullen (Bullen and Bullen 1976). Bushnell interpreted changes in mean scallop size to correlate with rising sea levels and variability in temperature. Bullen and Bullen (1976) subsequently used the changes in scallop sizes to support their idea that the Ceramic Archaic period in Florida began during a cool, dry period (Bullen and Bullen 1961). Apparently, neither Bushnell nor the Bullens were aware that size differences in scallops result from seasonal growth. In consequence, they overlooked the more parsimonious interpretation that the differences they observed represented different times of the year in which the scallops were collected.

Bushnell measured scallops from 11 levels of two test units from both the Preceramic and the Ceramic Archaic middens (Figure 12-4). A seasonal reappraisal of his measurements reveals that the scallops averaged between 42 and 54 mm in height, indicating that they were collected in most stages of warm-weather growth beginning in late spring/early summer and followed by collection of larger scallops later in the season up to the fall (Figure 12-3). With the arrival of a subsequent spring, the spring-through-summer collection pattern was repeated. The nearly parallel growth phases in each level indicate either

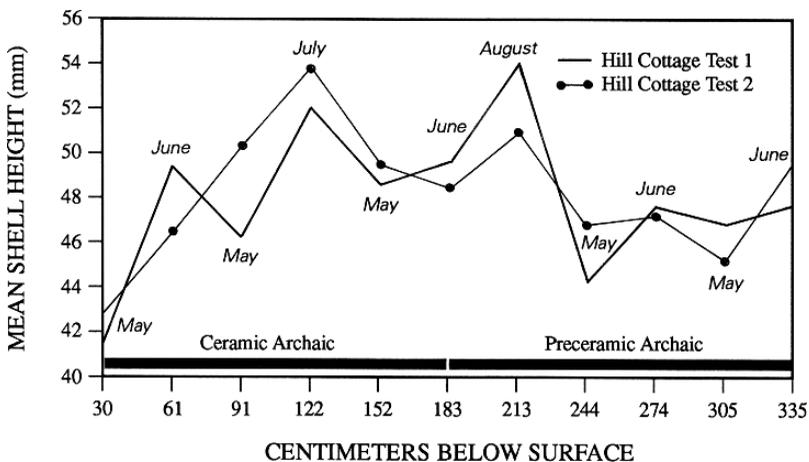


Figure 12-4. Comparison of mean bay scallop valve heights from two column samples from Hill Cottage midden (after Bushnell 1965). The number of specimens was 764 for Test 1 and 4,521 for Test 2.

that the two test units intersected the same unique seasonal deposits or, more likely, a similar seasonal pattern of collection was practiced during both the Preceramic and the Ceramic Archaic periods across the site.

Despite the introduction of pottery (at 183 cm below the surface in Figure 12-4), the use of scallops continued with no apparent effects on the generalized collection strategy. Bullen and Bullen (1976:6–20) observed that despite slight changes in the relative amounts of shellfish throughout the midden, the kinds of shellfish and other subsistence remains persisted unchanged throughout the Preceramic and Ceramic Archaic deposits. Scallops, oysters, quahogs, whelks, and conchs (*Melongena corona*, *Strombus* spp.), as well as fishes, were identified in both Preceramic and Ceramic levels. They noted that the introduction of pottery did not alter the kinds of tools used in the procurement and processing of food. These observations argue against the idea that the coast was not permanently settled until ceramics allowed larger populations to be sustained for longer periods.

The Bullens never directly approached the question of seasonal versus year-round settlement at Hill Cottage. They did contrast the site with nearby small sites, which they interpreted as periodic camps (Bullen and Bullen 1976:35), implying that Hill Cottage midden was occupied for periods longer than those associated with a seasonal camp. The presence of burials, post molds for domestic structures and drying racks, hearths, large numbers of utilitarian artifacts, and numerous decorative items, as well as the U-shape of the midden, support the interpretation of Hill Cottage midden as a large, permanently-occupied site (Bullen and Bullen 1976; Russo 2006). To date, however, only the season of death for the scallops is available for Hill Cottage midden, and more evidence is needed to confirm that the site represents a sedentary occupation.

## MANASOTA SEASONALITY AND SETTLEMENT

Safety Harbor and Manasota period cultures are characterized by shell middens and mound sites along coastal estuaries presumed to be permanent villages (Luer and Almy 1982). Smaller sites have been identified in the interior as well as among the estuaries. Regardless of location, small sites are interpreted as seasonal collection stations (Almy 1988; Austin and Russo 1989; Luer and Almy 1982). Some 25 years after the model was put forward, few Manasota sites have yielded seasonality data that have been or could be used to test the model (e.g., Austin 1995:220; Austin and Russo 1989; Quitmyer 1998). Typically sites are fit into the bipartite settlement typology (camp versus village) based solely on their relative size, complexity, and artifact diversity (e.g., Ardren et al. 2003:53; Schwadron 2002:208). That is, sites are identified as villages or camps in the absence of seasonality determinations. Below we present seasonality data to test the model of Manasota-area settlement patterns.

### **Palmer Site-Shell Ridge Midden: A Permanent Manasota and Safety Harbor Village**

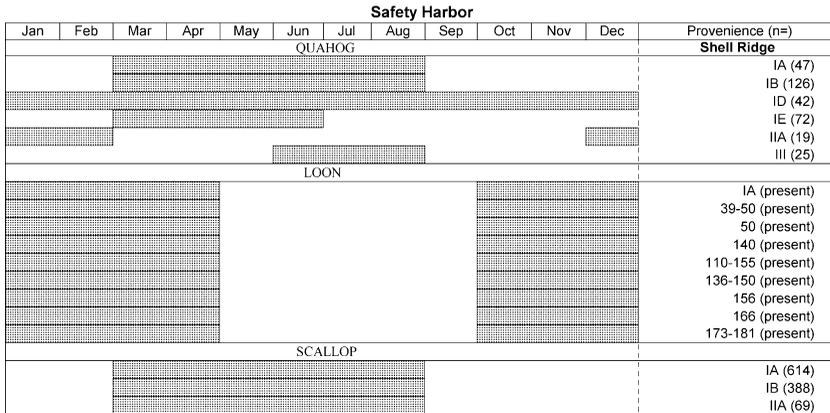
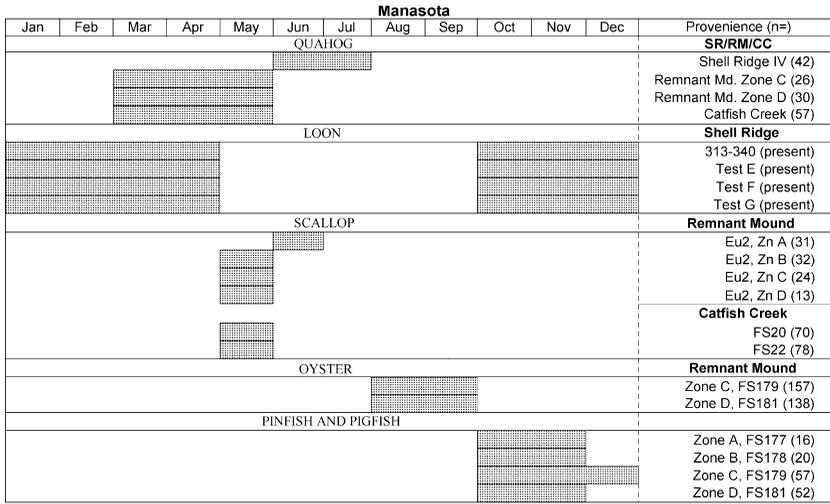
The Shell Ridge midden (8SO1) component of the Palmer site was occupied during the Manasota and Safety Harbor periods. It was first excavated by Bullen and Bullen (1976) and subsequently by Torrence, who reopened the Bullens' excavation units H and I (Quitmyer 1992, 1998; Torrence 1992). Shell Ridge midden consists of shell deposits over a kilometer long and a burial mound. The size and complexity of the site suggest it was a permanently-settled coastal village (Luer and Almy 1982; Milanich 1994:225). The combination of several lines of biological evidence indicates multi-season occupations during the Manasota and Safety Harbor periods. Season of death for quahogs indicates spring through summer occupations; the quahogs and loon data combined suggest fall and winter occupations during the Manasota period (Figure 12-5; Quitmyer 1992:56; 1998:203). In addition, wild plants attest to a spring through fall occupation (Newsom 1992, 1998). The quahog, loon, and scallop data verify multi-season occupation of the site during the Safety Harbor period as well (Figure 12-5).

Although the Shell Ridge midden data demonstrate that the site was occupied during multiple, if not all, seasons of the year, scallops were, of course, a seasonal resource. Quitmyer (1998) measured 1,143 scallop valves from 14 Safety Harbor proveniences. The mean valve heights fell between 38 mm and 43 mm (except for one sample mean of 49 mm), indicating a spring collection period. This contrasts with the warm-weather, late-season scallop harvest at the Archaic-period Hill Cottage component (8SO2); the narrower size range of the Shell Ridge scallops suggests a different collection strategy. During the Safety Harbor period, scallops were collected at the Palmer site in the spring, early in their growth cycle when they were relatively small.

Supporting evidence for such seasonal exploitation may be found in other aspects of the assemblage. The small scallops indicate that a mass capture technique was used to collect them, a technique that would incidentally gather benthic shell hash. The Shell Ridge midden contains large amounts of very fine shell debris typical of benthic hash (Quitmyer 1998). Collection techniques such as drag-netting and basket scooping might capture large numbers of scallops regardless of their size but limit the number of scallops available later in the season. In contrast, Archaic scallop assemblages contained few small individuals and lacked the fine shell debris, indicating a more selective collection strategy, probably simple hand collection.

### **Catfish Creek Site: A Seasonal Manasota Camp**

The Catfish Creek site (8SO608), which was occupied around A.D. 700, is less than a kilometer northeast of the Palmer site on a small freshwater creek (Figure 12-1). The site consists of numerous small shell middens or "scatters"



**Figure 12-5.** Season of death for selected animals from Manasota and Safety Harbor period sites in the Manasota culture area; (Catfish Creek [Austin and Russo 1989]; Remnant Mound [Russo and Powell 2005] and Palmer Site-Shell Ridge Midden [Quitmyer 1998]).

with pit features. Season of occupation estimates are based on quahogs and scallops (Figure 12-5; Austin and Russo 1989). The mean sizes of the scallops were 43 mm and 46 mm, indicating an early spring death. The quahogs also were collected in early spring. These data, combined with a limited assemblage of utilitarian tools, suggest the area served as a seasonal camp. No evidence of diverse, long-term maintenance activities, storage, structures, mounds, or

elaborate ceremonialism is present. The site probably articulated with the larger Shell Ridge midden, likely functioning as a logistical place from which to collect resources for the larger village (Austin and Russo 1989:77). While at the camp, collectors processed and consumed other estuarine resources, whose remains are found in the Catfish Creek midden.

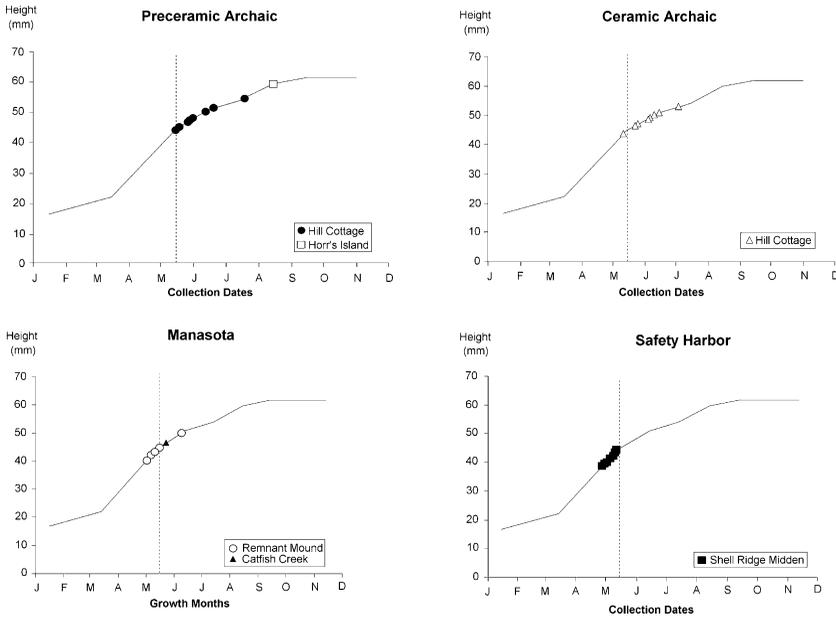
Differences in Archaic and Manasota collecting strategies at Shell Ridge and Catfish Creek may be linked to human population increase. Milanich (1991) noted an increase in the number of Manasota-period sites from the previous Archaic period and speculated that population had increased significantly. The apparent increase in seasonal encampments during the Manasota period may reflect a need for an expanded resource base. The intensive exploitation of scallops at Catfish Creek and Shell Ridge during a brief season reflects increased pressure on the resource. Intensive harvesting of scallops early in the season might have reduced the number of scallops available for harvest later in the season.

### **Remnant Mound: A Permanent Manasota Village**

One other Manasota village site has yielded seasonal data (Figure 12-1). The Remnant Mound at DeSoto National Memorial is part of the Shaw Point site (8Ma7), which consists of a massive, complex array of shell mounds, ridges, ramps, and burial mounds (Schwadron 2002). Evidence for season of death for quahogs, scallops, oysters, pinfishes, and pigfishes (*Orthopristis chrysoptera*) was considered (Quitmyer 2002:188; Russo and Powell 2005). The oysters, pinfishes, and pigfishes probably died from the late summer through fall, possibly into early winter. Based on four scallop samples, it appears that scallops were collected during the early spring (Russo and Powell 2005) in a pattern similar to that at the Catfish Creek and Shell Ridge middens (Figure 12-6). Two quahog samples indicated a late winter/spring period of collection (Russo and Powell 2005). In combination, these data demonstrate that this large village was used throughout the year.

## **DISCUSSION**

Seasonality analyses demonstrate that Archaic peoples inhabited the coastal zone throughout the annual cycle. These data challenge the notion that Archaic peoples were hunter-gatherers who wandered the interior forests of peninsular Florida, only occasionally making seasonal forays to the coast. At large shell ring sites such as Horr's Island and Hill Cottage, Archaic peoples lived on the Gulf coast year round. Without the benefit of cultivated plants or pottery, in some cases, Archaic peoples became sedentary through their strategies of exploiting the extensive, highly-productive coastal fisheries. Gulf coast estuaries offered abundant resources, and peoples using these were not



**Figure 12-6.** Comparison of seasons of scallop collection among Safety Harbor, Manasota, and Archaic periods within the Manasota culture area. Proveniencies provided in legends (see Bushnell 1965; Quitmyer 1998; Russo 1991a; Russo and Powell 2005). The curve follows the monthly mean shell heights of modern bay scallops in Figure 12-2.

compelled to engage in a seasonal round in search of less abundant interior terrestrial foods. Thus they were free of the migratory constraints typically considered limiting factors for interior Archaic hunter-gatherer population growth and social organization (Smith 1986; Steponaitis 1986).

A much larger, more sedentary, Archaic population lived on the southwestern Gulf coast practicing more varied residential and subsistence patterns than previously thought. Both large village/ceremonial shell rings (Dickel 1992; Russo and Heide 2004) and smaller logistical sites are found along the coast (Lee et al. 1998; Torrence 1999; Wheeler et al. 1997). It remains to be seen if the smaller coastal sites were logistical foraging stations for the large, permanent coastal villages; or if the smaller sites were year-round habitations that interacted with the larger settlements in other ways.

The presence of both large and small Archaic coastal settlements does not mean that coastal peoples did not interact with interior resources and peoples. Archaic sites in the interior of southern Florida indicate that the coastal zone was not the only place with intensive Archaic occupations. Dense Archaic middens occupied between 1000 and 3000 B.C. are found throughout the

freshwater Everglades (Beiter 2001; Masson et al. 1988; Mowers and Williams 1972; Newman 1993; Russo 2005; Schwadron 2005). The sites presently known are situated on relatively small tree islands (circa 50 m across), which probably limited the scope of the communities living on them. These interior Archaic sites refute the idea that interior Archaic peoples were seasonal hunters and collectors. At least some interior groups were freshwater fisherfolk, intensively exploiting the interior marshes for fishes, turtles, and other aquatic reptiles. The occasional, but ubiquitous, presence of coastal mollusks indicates that these people were connected to coastal settlements in some way.

How can these inland sites be shown to be different cultures or polities from coastal sites if they have the same artifacts? It is difficult to determine Archaic cultural relationships largely due to the absence of differences in diagnostic artifacts between the interior and coast. Specifically, are the interior Everglades sites logistical foraging camps for coastal groups or home to a separate and culturally-distinct people (Griffin 2002:287–289)? Although the question may not be answerable with material culture, ultimately seasonality studies may determine if inland sites were occupied throughout the year or only seasonally. Testing whether interior and coastal Archaic sites were occupied during the same seasons or year-round will enable us to determine if they represent separate and distinct cultural entities or different aspects of a seasonal round. This will be a pivotal test for the model of seasonal logistic foraging.

In addition to raising questions about settlement patterns during the Archaic period, this study reveals two distinct patterns of scallop collection heretofore unrecognized: the Archaic strategy of collecting from summer to early fall and the Manasota pattern of collecting in the spring (Figure 12-6). In modern Florida, the scallop season is closed between April and July to allow the scallops to reach reproductive maturity (Bowles 1989). The Manasota cultures did not practice this conservation strategy. Rather, they collected scallops as soon as the majority of the scallops reached collectible size, precisely during the period when modern authorities believe it is necessary to avoid exploitation in order to ensure the long-term productivity of the species. The question, then, is whether the Manasota strategy impacted the scallop populations so adversely that their numbers were reduced later in the year or, perhaps, in subsequent years.

Typically, changes in the size of animals recovered from archaeological sites are equated with environmental change or overexploitation (e.g., Broughton 1997; Bushnell 1965; Cumbaa 1976; Jackson et al. 2001; Jones et al. 2004; Quitmyer 1998; Quitmyer and Jones 2000; Wing 2001). More rarely are such changes linked to human choice (see Quitmyer 1998; Quitmyer and Jones 2000:165; Sandweiss 1996). Despite the fact that there appears to be a reduction in size of individual scallops from the Preceramic Archaic into the Safety Harbor period (Figure 12-6), the slight differences in size among samples within each period can be attributed to differences in season of collection rather than to environmental change (e.g., Bushnell 1965). This suggests that

the collection strategy did not result in overexploitation, at least to any irreparable degree. The amounts and sizes of scallops in the assemblages are more simply understood in terms of subsistence behavior associated with seasonality than in terms of overexploitation.

We have suggested that the early season scallop collection during the Manasota and Safety Harbor periods limited peoples' options. Such a strategy may have reduced the scallop populations to a point where late season collection was not practical. But that suggestion does not provide insight into the basis for this decision. The question remains, why did the Manasota people not wait until later in the year to collect the larger scallops as did the Archaic people? A myriad of scenarios could account for early-season targeting of scallops. Spring may have been an otherwise lean time requiring such intensification, making longer-term implications irrelevant. Or, summer and fall, when scallops were larger, may have been a time when other resources were bountiful and scallops were not an attractive resource. Or spring may have been a time when the logistically foraging fishers left the village to obtain other resources elsewhere, leaving fishing and shellfish collection in the hands of those (e.g., children and older individuals) who could easily manage the shallow, warm waters where scallops were collected.

By suggesting that each strategy was a choice that resulted in long-term, sustainable patterns of scallop collection at each site, we are not concluding that the collectors were imbued with a conservation ethic. Other shellfish taxa were collected at these sites and some shellfish did decrease in size during the Archaic and Manasota periods, suggesting the possibility of over-harvesting (Quitmyer 1998:204). More likely, the choices in scallop-collection strategy had to do with other aspects of social and subsistence behavior.

## CONCLUSION

Oysters are usually the dominate shellfish in coastal shell middens of the Gulf and Atlantic coasts of the southeastern United States. Scallops, although abundant, just happen to show us a more easily measured seasonal signature than do oysters and the other plant and animal remains. In either case, it may be misleading to characterize shell-bearing sites as scallop-collection sites or whelk-reduction stations or some other functional aspect of shellfish processing endeavors. Certainly, activities related to shellfish and subsistence occurred at these sites, but undoubtedly so did other social behaviors such as raising children, visiting neighbors, celebrating events, and holding rituals, the common occurrences of daily human life. These social functions may more usefully describe these sites, e.g., households, villages, ceremonial centers, and lend insight into the broader settlement and social organization of the greater society. But to arrive at these interpretations, minimally we have to determine when and for how long each site was occupied during the annual cycle.

Our seasonality data provide evidence of year-round occupation of the coastal region in southwest Florida in general, and at some sites in particular, beginning as early as the Preceramic Middle Archaic. It is clear that the tradition of sedentism supported by the rich estuarine environment but without a domestic food base appeared very early and continued into the 16th century A.D. in ever-changing subsistence strategies. In this study, we have tested earlier models of settlement which were based on no seasonal data whatsoever. The patterns identified here await the next challenge, and hopefully even more rigorous testing of seasonality.

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