CHAPTER 2
ENVIRONMENTAL AND ARCHAEOLOGICAL CONTEXTS

Asa R. Randall

This chapter situates field school investigations at the Juniper Club within regional environmental and archaeological contexts. Environment is considered first, focusing in particular on physiography and hydrology. The archaeological contexts are then reviewed, with particular attention paid to the Middle and Late Archaic periods. In both cases a regional overview is provided, followed by locality-specific discussions.

ENVIRONMENTAL CONTEXT

The Silver Glen Springs watershed is situated at the intersection of Marion, Lake, and Volusia counties, approximately 15 km north of Astor, Florida. The watershed is defined by the first magnitude Silver Glen Springs that issues forth along a 1-km-long run into Lake George (Figure 2-1). This lake is the second largest body of water in Florida. In addition to Silver Glen Springs, Lake George directly receives water input from the St. Johns river, Juniper Springs, and Sweetwater Springs to the south, and Salt Springs to the north. The current configuration of these hydrological features and the greater St. Johns basin resulted from a long history of fluctuating sea level and attendant progradations and regressions of surface waters, localized faulting and solution of carbonate sediments, as well as more recent factors such as channel dredging for navigation. A number of syntheses and cogent discussions of the geology and geomorphology of Florida have been published (Randazzo and Jones 1997; White 1970). Those aspects relevant to the Silver Glen Springs watershed are discussed here.

Regional Physiography

Like all of peninsular Florida, the regional physiography of the St. Johns River Valley ultimately owes its current configuration to marine processes (Schmidt 1997). Currently, the dry land of peninsular Florida occupies approximately one-half of the Florida Platform. Extending out into the Gulf of Mexico and Atlantic, the Platform is characterized by low relief, and is composed of Cenozoic carbonate sedimentary lithologies that lie unconformably upon a Paleozoic and metamorphic basement.

The Florida Platform has been alternatively inundated by shallow seas and exposed as dry land during much of the Cenozoic era. The low elevation of the Platform (a maximum of 104 meters in the Panhandle) has made it particularly susceptible to relatively small changes in sea level. Sea level fluctuation has resulted in frequent progression and regression of marine, estuarine, and near-shore environments. This process has left the Florida coastal zone dominated by positive features including elevated relict upland ridges, barrier beaches, and sand dunes, and negative features representative of shallow seafloors (Schmidt 1997). Terraces that reflect long-term sea level stands have been identified. In the study area these include the Silver Bluff and

Figure 2-1. Location of springs contributing to Lake George (USGS Daytona Beach Beach 100k quadrangle).

Palmlico Terraces (0-8 m amsl) and Penholoway and Talbot Terraces (8-21 m amsl). Additionally, the carbonate composition of many of Florida's sedimentary deposits has been equally influential. Carbonate lithologies are particularly susceptible to dissolution, which results in karst topography and hydrogeology. Typical features of karst topography are sinkholes, sinking rivers, disappearing lakes, and springs.

Geomorphologists have recognized a number of physiographic regions defined by topography, surficial geology, and hydrology (Cooke 1939; Schmidt 1997; White 1970). The St. Johns River is located in the Atlantic Coastal Lowlands, a zone typified by coast-parallel features. Most positive features in this region are relict beaches and marine terraces formed during the late Pleistocene and Holocene, and are composed of siliclastic marine sediments. The headwaters and mouth of the river are situated within the Eastern Valley, while the middle St. Johns occupies a position west of the Crescent City-Deland Ridge. The Crescent City-Deland Ridge is the only karst-dominated topography in the region, and is a major source of groundwater via the Floridan Aquifer.

Groundwater and channeled water hydrology of the St. Johns is linked to precipitation and geology. Ultimately, all of Florida's freshwater is derived from precipitation (Miller 1997). Although much precipitation is lost due to evapotranspiration and runoff, a significant portion is returned for the recharge of aquifers. Water levels for most of Florida's streams and lakes are directly related to the aquifer levels. Florida has five principle aquifers, only two of which have output in the middle St. Johns. In general, the study area is typified by an undifferentiated surficial aquifer. Water is typically unconfined in Pleistocene and Holocene sediments averaging 50 feet in thickness, and is present at or just below the ground surface. The Floridan Aquifer is the most extensive and productive of all of Florida's aquifers. It extends throughout the state, in addition to Georgia, Alabama, and South Carolina. Generally, the Floridan Aquifer is restricted to carbonate rocks of Tertiary Age, and remains confined well below the ground surface. The aquifer is unconfined or outcrops in regions where these carbonate rocks are thin or have been penetrated by sinkholes. In the study region, the Floridan Aquifer discharges via several first-order magnitude (greater than 100 cubic feet per second or more) springs, including Silver Spring, Silver Glen Springs, and Blue Spring.

As Miller (1998:28) notes, the dominant factor in the region's landscape is water, which is concentrated along the St. Johns River drainage. The St. Johns Rsiver, which has its headwaters in southern Brevard County and discharges into the Atlantic at Jacksonville, is the largest river in Florida, measuring 500 km long. It is also unique as it is one of few rivers in the northern hemisphere to flow from south to north. Although it is extensive and broad, the St. Johns discharges on average only 8,300 cubic feet per second. The discharge is related primarily to volume and less to velocity. This is due to a wide floodplain and a low gradient (0.02 m per kilometer) (Miller 1998:28). For most of its length, the St. Johns is within five feet of mean sea level. The low gradient makes the river responsive to small changes in sea level, and even today the river is tidally influenced as far south as the Wekiva River.

The St. Johns River is composed of three distinct segments whose different characteristics relate to a complex geomorphic history (Adamus et al. 1997; Schmidt 1997; White 1970). Like many of the large river systems in Florida, the St. Johns River is situated in a swale between elevated, upland ridges. Although this configuration was once thought to have formed during late Pleistocene times as a drowned lagoon, it is now believed to have been formed in part within a beach-ridge plain (White 1970) during the early Pleistocene. With the exception of the lower St. Johns, the river is characterized by lakes arrayed in a linear fashion, oriented with the flow of the river. White (1970) suggests that these lakes are sinkholes which have been differentially filled with sediment and linked by channeled surface water.

The upper segment of the river flows between southern Brevard County and Sanford, Florida. This segment is the headwaters, and is characterized by poorly integrated braided streams and extensive wetlands. The middle St. Johns, between Sanford and Lake George, is often referred to as the St. Johns Offset. In a headward-consequent course, the river would be expected to flow from the headwaters to Jacksonville in a relatively straight line following the late Pleistocene beach ridges of the Eastern Valley. However, at Sanford the St. Johns jogs to the west, flowing west of the Crescent City-Deland Ridge. North of Lake George, the river jogs back to the east. It is believed that this portion of the river formed during the early Pleistocene, during a period of low sea level, when the offset portion of the river captured the headwaters south of Sanford. The river was eventually integrated when the basin was first inundated, creating an estuary. The drainage pattern of the middle St. Johns is dominated by an anastomosing pattern, characterized by numerous parallel channel segments. The floodplain is composed of freshwater marshes and swamps. The lower St. Johns is situated between the eastward jog north of Lake George to the mouth at Jacksonville. This course is parallel with Crescent Lake, a relict channel of the St. Johns abandoned when the middle St. Johns switched to its current location. This section of the river is essentially a drowned estuary, and is characterized by a broad channel, averaging over 1 km in width, and by inshore marine habitats.

Late Pleistocene and Holocene Environmental Trends

The same processes that have affected the physiography and hydrology of Florida—namely fluctuating sea level and attendant shifts in climate and environmental regimes—have structured human settlement and their archaeological recognition in the study region. At the end of the Pleistocene sea levels were significantly lower than today (upwards of 40 m), resulting in the extension of inhabitable land over 200 km into the Gulf of Mexico and to a lesser extent into the Atlantic (Faught 2004). Between roughly 12,000 and 10,000 years ago sea levels initially rose quickly, inundating large expanses of the Florida Platform and interior drainages. Although near-modern levels were gradually achieved by 6000 years ago (Faught 2004), sea level fluctuated throughout the middle and late Holocene. The increase in sea level and surface water resulted in the inundation of many early sites. Although inundated sites are routinely discovered in low-energy environments such as the Gulf of Mexico and interior sinks and drainages, many sites along the Atlantic Coast were likely destroyed or deeply buried by transgressing shorelines (Ste. Claire 1990).

The reduction of river gradients in response to sea level change resulted in the initial alluviation and subsequent surface stabilization of interior and coastal fluvial regimes, which in turn affected the flow and biotic characteristics of river channels and floodplains (Schulderein 1996). Peninsular Florida's arid late Pleistocene conditions, characterized by low surface water levels, gradually gave way to a wetter, modern regime ca. 7000 years ago (Watts et al. 1996). At 11,000 years ago oak scrub and prairies characterized peninsular Florida. Around 9500 years ago pine and swamp vegetation expanded from South Carolina throughout much of the Coastal Plain, becoming fully established by 5500 years ago in southern Florida (Watts et al. 1996: 37).

Although the broad characteristics of the middle St. Johns were in place well before humans entered the region, the late Pleistocene and Holocene history of the valley has important consequences for settlement and archaeological recognition. Today, the floodplain is dominated by multiple channels, oxbow cutoffs, lakes, and lagoons. These features reflect a complicated history of channel switching, avulsion, and infilling. In part, this variation is related to the shallow gradient of the river and sea level. Based on the distribution of archaeological sites, this hydrologic regime dates to at least 7000 years ago when the elevation of the river rose to within a meter of present-day levels. However, there were likely significant shifts in the course of the river that would have had effects on the distribution of swamps and wetlands. The presence of archaeological sites hundreds of meters from the main channel, or outside of the range of productive shellfish beds, indicates changes have occurred (Wheeler et al. 2000). The picture is further complicated in shallow bodies of water, such as Lake George. Presumably, much of the lake bed was once exposed as land. Where the pre-inundation channel of the St. Johns was situated with respect to the SGS watershed is unknown. More data are necessary to understand the complexity of channel changes through time. Finally, while it is has long been assumed that springs along the St. Johns did not have established flow until well into the Holocene (Miller 1998), this hypothesis has yet to be tested across a wide range of locations. Indeed, recent investigations of Salt Springs indicate that water was flowing there as early as 9000 years ago (O'Donoughue et al. 2011). More recent changes in the flow characteristics of the river have been wrought during the last 200 years. In addition to the urbanization of the headwaters, the majority of the main channel of the St. Johns has been dredged. Historic documents indicate that the river was first dredged in portions as early as the 1880s, including Volusia Bar at the south end of Lake George (207^{th} House of Representatives, Document no. 1111). During the last century, the river has been fully channelized.

Silver Glen Springs Watershed

The Silver Glen Springs watershed is hydrologically defined by the first-magnitude Silver Glen Springs. Water issues out from a main vent in the center of the spring pool, as well as a secondary vent to the west (Figure 2-2). From here it travels ca. 1 km along a channel of variable width, where it debouches into Lake George. Today the

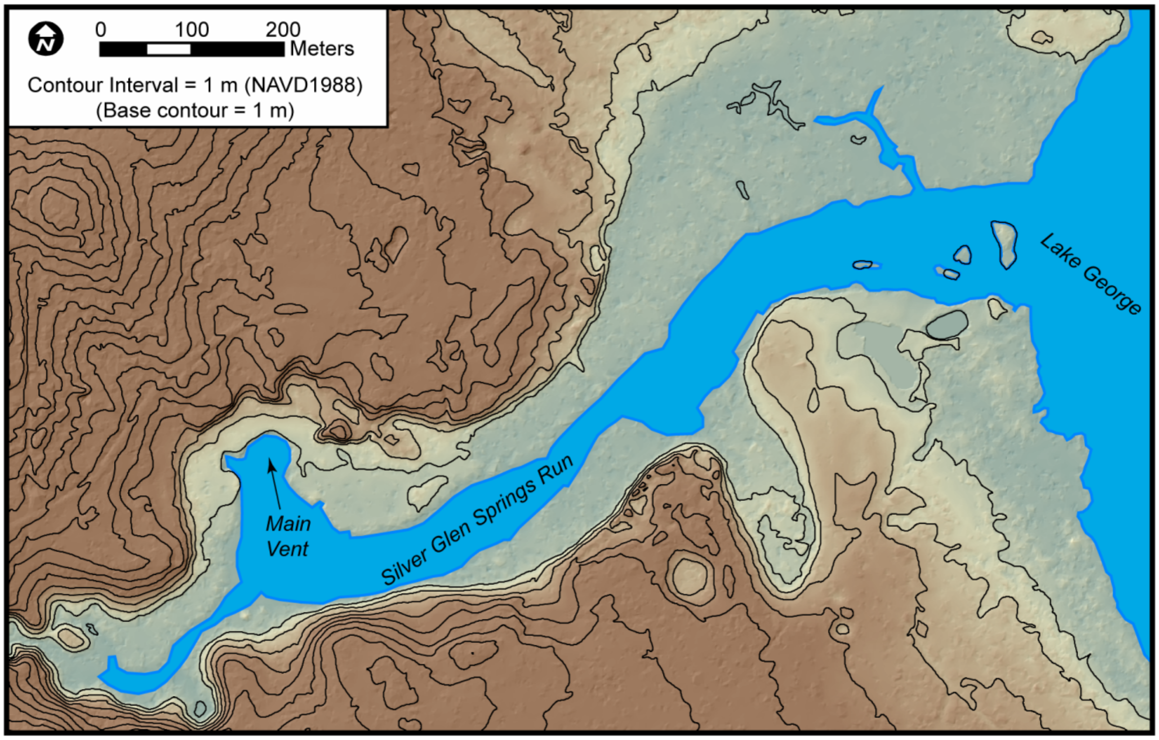

Figure 2-2. Topography of the Silver Glen Springs watershed (elevations derived from the Volusia County Department of Public Works LiDAR dataset).

spring pool is surrounded by low-lying topography associated with a recreational area of the Ocala National Forest. This surface configuration is no doubt a product of ancient shell deposition and recent shell removal. The spring run flows between elevated landforms on either side, with wetlands of varying width separating the channel from the shoreline. The upland slope is generally quite steep, and rises rapidly in absolute elevation from 1.0 to 4.0 m. Although this slope no doubt reflects the natural geomorphology of the basin, particularly to the west, it should be kept in mind that anthropogenic deposits are present on both the north and south banks of the run. Like the spring pool, much of the topography here is a consequence of ancient human deposition.

A variety of soils are present within the Silver Glen Springs watershed (Figure 2-3). The following descriptions are derived from USDA-NRCS (2011) definitions and soil surveys of Lake (USDA 1975) and Marion (USDA 1979) counties. *Paola fine sand* (0 to 8 percent slopes and 8 to 17 percent slopes) is present in the western aspect of the recreational area at the spring pool. Subtypes of this soil vary by slope, and range from level sand hills to strongly sloping surfaces associated with sinks, ridges, and stream banks. This soil is excessively drained, and is associated with pine-scrub oak forest. The area also contains *Pomello sand*, which is moderately well to somewhat poorly drained soil. Unmanaged vegetation is typified by scrub oak, dwarf live oak, saw palmetto, and various pines. Outside of the recreational area to the northeast is poorly drained *Immokalee sand*, which is host to longleaf and slash pines and undergrowth of saw palmetto, gallberry, wax myrtle, and pineland threeawn. Much of the spring run is

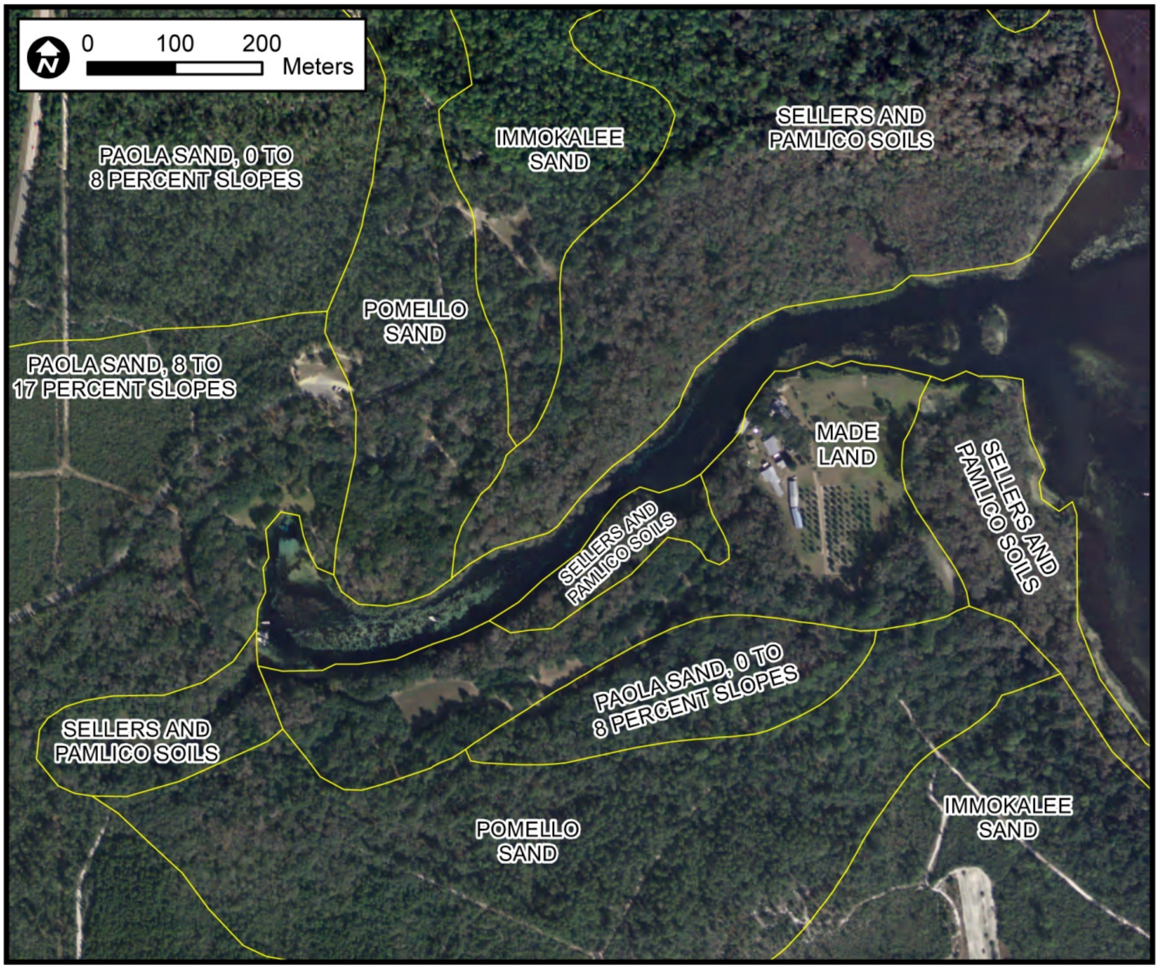

Figure 2-3. Soils present within the Silver Glen Springs watershed.

bordered by soils of the *Sellers* and *Pamlico* series. These poorly drained soils are typical of depressional areas, poorly defined drainage ways, and level floodplains. Native vegetation consists of pond pine, tupelo gum, sweetbay, bald cypress, gum trees, cypress, greenbrier, wax myrtle bushes, with undergrowth of gallberry or pickerelweed and perennial grasses. The one exception on the southern margin of the run is *Made Land*, a description that the USDA employs for locations which have been heavily impacted by cutting or filling. Indeed, much of this area was mined for shell in 1923, which no doubt resulted in the reworking of deposits across much of the terrace edge.

The forests comprising the margins and uplands of the Silver Glen Springs watershed are host to a wide array of fauna. Those of economic importance to humans include white-tailed deer, black bear, raccoon, opossum, gopher tortoise, and turkey. Numerous species of birds, mammals, reptiles, amphibians, and gastropods also inhabit these zones. The wetlands associated with Silver Glen Run and Lake George provide habitat for a diverse array of aquatic fauna. Vertebrates such as alligator, turtle, otter, and upwards of 40 species of fish are present. In addition, the wetlands away from the main pool and within Lake George are potential habitat for numerous mollusks. Species of importance to the inhabitants of the region include the gastropods *Viviparus georgianus* (banded mystery snail) and *Pomacea paludosa* (Florida apple snail), as well as the freshwater bivalve (Unionidae). Smaller gastropods such as *Elimia sp.* (rasp Elimia), and the rams horn and mesa-rams horn (*Planorbella sp.*) can be found with these other species. Unfortunately, little detailed information on the habitat preferences, habit, and seasonal life histories of these species is currently available. It is unknown in what frequencies these invertebrate species normally co-occur. Moreover, few data exist on whether there is predictable variation in their seasonal or spatial availability. In general, all species prefer shallow near-shore environments, such as grassy marshes and shallow lagoons (Quitmyer 2001). *Viviparus* prefer soft, muddy substrates with slack water, such as lagoons, creek edges, lakes, and springs (Clench and Turner 1956). *Pomacea* is known to prefer marshes with emergent vegetation, typically with at least 50 cm of water (Darby et al. 2002).

Recent Landscape/Land Use Change (1923–Present)

Like the much of the St. Johns basin, the Silver Glen Springs watershed was radically transformed by mining and dredging operations. Much of what we know about the pre-modification arrangement of the watershed is derived from early explorers and archaeologists whose observations will be related in subsequent sections. Now is a good time, however, to outline changes that have occurred in the last century. Lake County probate documents record agreements regarding the sale of shell and permission to mine and dredge on both sides of the run. C. W. Perkins, later the Lake George Shell Corporation, was granted the right to mine shell on the south side of the run, including the mouth and portions to the southwest of there. He was also granted permission to mine shell on the north side, approximately half-way down the run. Furthermore, he was permitted to dredge the channel in order to facilitate loading shell onto barges. In 1932, the agreement for the south side of the run was amended. Perkins apparently had excavated shell bearing deposits well below the water level in numerous places along the run, in violation of the agreement. Similarly, the Juniper Club was faulted for removing shell for their own roads, and allowing Marion County workers to do the same. The Lake George Shell Corporation was given the right to mine remaining shell above the water level up to 500 feet from the spring run. We also know that beginning sometime in the early 1930s, Henry Henderson (then owner of the land surrounding the spring pool) began removing shell from around the spring, although it is unknown whether it was carted away or dredged (see below). He even constructed a house that overlooked the spring pool. Over the years, the northern side of the run has passed through several owners, who further developed the property. Many of these structures were recorded on the Juniper Springs USGS topographic quadrangle. When the recreational area was acquired by the U.S. Forest Service in 1990, the majority of this infrastructure was removed.

Figure 2-4. A comparison of aerial photographs of the Silver Glen Springs watershed, taken between 1941 and 2004.

There are no known photographs of Silver Glen Run prior to or during shell mining. However, aerial (Figure 2-4) and terrestrial photographs record the effects of mining shell and developing the land for recreational use. Aerial photographs captured by the USDA are available from 1941, 1958, and 1974, as is a recent image from 2004. There are several patterns of note. In 1941, there are a number of areas that were cleared of vegetation, as evidenced by light colored patches. Importantly, this includes the tract around the spring pool and extending into the uplands, as well as the majority of southern border of the spring run, property of the Juniper Club. The southwest portion of the run is cleared back approximately 400 feet, consistent with the probate court documents. At the mouth of the run is the other southerly clearing. This is associated with the Juniper Club's lodge and other infrastructure. Across the watershed in successive years, vegetation filled in these cleared areas, leaving a patchy network of open spaces and immature forests.

ARCHAEOLOGICAL CONTEXTS

A number of syntheses of Florida prehistoric archaeological contexts have been issued for the St. Johns Basin (Goggin 1952; Miller 1998; Russo 1990a) and for the state of Florida (Borremans 1990; Milanich 1994; Milanich and Fairbanks 1980; Russo 1990b). These and other locality-specific studies are drawn upon to review the culture history of the middle St. Johns River.

Paleoindian (ca. 13,000–11,000 cal BP[1]) and Early Archaic (ca. 11,000–7500 cal BP)

The late Pleistocene Paleoindian traditions include Clovis, Suwannee-Simpson, and Dalton, which are identified on the basis of diagnostic hafted bifaces. In addition to lanceolate hafted bifaces, the toolkits are characterized by a suite of formal unifaces (Daniel et al. 1986), bola stones (Neill 1964), the "Aucilla adze," and a variety of bone and ivory tools (Dunbar and Webb 1996). Early Holocene traditions dating between ca. 12,000 and 10,000 years ago are identified by Side-Notched and Corner-Notched Bolen points (Bullen 1975). Aside from changes in hafted biface morphology and the addition of new tools, the toolkits of these horizons are consistent with Paleoindian forebears, particularly Dalton.

Today the oldest sites are typically restricted to inundated contexts such as drowned river segments (Dunbar et al. 1988; Faught 2004), sinkholes (Clausen et al. 1979), or perched basins and depressions (Daniel and Wisenbaker 1987; Neill 1964; Sassaman 2003c). A trend towards increased surface water ca. 11,000 years ago and subsequent settlement expansion is attested by Early Archaic diagnostics at Late Paleoindian sites, as well as small numbers of Early Archaic diagnostics in previously uninhabited localities. In general, they are redundant and may represent frequent residential mobility (Milanich 1994). Noting the co-occurrence of Paleoindian artifacts and karst topography in northwest Florida, Dunbar and Waller (1983) posited the "Oasis" hypothesis, that in effect Paleoindian populations were tethered to karst regions, abundant in toolstone and reliable surface water. Although this model matches the general

[1] Calibrated years before present.

distribution of early components, Paleoindian and Early Archaic diagnostics have been recovered from the St. Johns Basin (see below).

Between 10,000 and 7300 cal BP, Florida's Archaic traditions remain poorly defined (Austin 2004; Milanich 1994). Stemmed points, consistent with the Kirk Stemmed type and locally referred to as Kirk, Wacissa, Hamilton, and Arredondo (Bullen 1975) are distributed throughout the North, Central, and Gulf Central portions of the state, often in similar localities as early forms (Milanich 1994). Stratigraphic excavations at Harney Flats (Daniel and Wisenbaker 1987), West Williams (Austin 2004), and Trilisa Pond (Neill 1964) indicate an increase in the diversity of unifacial technology.

This period also witnesses the establishment of a long-standing mortuary tradition involving the interment of individuals in shallow bodies of water such as ponds or sinkhole margins. Windover Pond (ca. 9500–7500 cal BP) in Brevard County represents the earliest and is the most thoroughly investigated pond mortuary in the region (Doran 2002b). These sites are typified by large numbers of individuals, and appear to have been repeatedly used over extended periods. For example, at least 168 individuals were interred at Windover Pond over the course 1300 years. Outside of the middle St. Johns pond burials continue into the Middle Archaic (Beriault et al. 1981; Doran 2002a).

In general, Paleoindian and Early Archaic sites are underrepresented within the study area (Sassaman et al. 2000). Several factors may account for this, including a lack of adequate toolstone as well as fewer surveys of submerged contexts. In the St. Johns Basin, early sites are expected to occur adjacent to first- or second-magnitude springs fed by the Floridan Aquifer, including Silver Glen Springs, Salt Springs, Juniper Springs, Fern Hammock Springs, Green Cove Springs, Beecher Springs and Blue Spring (Miller 1998:84). The few known sites and isolated finds that have been documented seem to fit this overall pattern (Sassaman et al. 2000). A survey of Crescent Lake demonstrated that there is great potential for recovering early assemblages in the region (Sassaman 2003c). Crescent Lake is a perched water source that was well-watered throughout the late Pleistocene and early Holocene. Collector surveys and near-shore survey of submerged contexts revealed the presence of numerous early diagnostics. Paleoindian and Early Archaic diagnostics have been recovered from Silver Glen Springs, and have also been reported from the bottom of Lake George (Thulman 2009).

Middle and Late Archaic (ca. 7500–2800 cal BP)

Several environmental and social trends define the Middle and Late Archaic periods. In broad terms the Middle and Late Archaic periods are coeval with increasingly wetter conditions of the middle Holocene, with essentially modern conditions occurring by the end of the Late Archaic. Sites of this period are found throughout much of Florida, and for the first time are located in interior forests, along the St. Johns River and the Atlantic Coastal Lagoon (Milanich 1994:77). Lifeways predicated on intensive shellfishing are present in the St. Johns by 7300 cal BP and no later than 6000 cal BP on the northeast coast of Florida (Russo 1996). The distribution of sites reflects an overall increase in available surface waters and the exploitation of new habitats, as well as a probable increase in population. By 5500 years ago regionalization is evident across Florida. These new traditions, focused particularly on wetlands, presumably resulted in increasingly larger populations and more permanent settlements (Milanich 1994:87).

Throughout Florida, changes in material culture, including projectile point styles and the appearance of pottery, are used to delineate subperiods and local traditions. In the middle St. Johns several subperiods have been defined, including the Newnan Horizon, the Mount Taylor culture, and the Orange period. Additionally, the "preceramic Archaic" is a generic term denoting Middle to Late Archaic traditions dated between 7000 and 4600 cal BP, which were without pottery technology. Archaeologists typically assign sites to the preceramic Archaic when Archaic-age assemblages lacking diagnostic artifacts are recovered.

Newnan Horizon (7500–4600 cal BP). Across much of Peninsular Florida researchers have recognized the Newnan Horizon, characterized by short, narrow stemmed, broad bladed chipped stone hafted bifaces (Milanich 1994:76). A number of types have been defined, including Newnan, Marion, and Putnam (Bullen 1975). There is significant variation in the form of stemmed hafted bifaces from this period, leading to a less formal designation of the "Florida Archaic Stemmed" type, which includes any broad-bladed stemmed hafted biface. Lithic artifacts during this period were typically manufactured from thermally altered chert or silicified coral (Ste. Claire 1987). Dates place Newnan sites between 7500 and 4600 years ago (Milanich 1994:77), although similar forms were likely produced into the Late Archaic period.

Settlement in interior Florida, which contains much of the available chert and silicified coral for the production of stone tools, is characterized by a dichotomy between large, diverse assemblages and small lithic scatters. The large sites have been interpreted by Milanich (1994:79) as indicative of reduced seasonal mobility. Austin (2001) suggests, however, that the larger sites likely represent more intensive short-term reduction episodes near raw material outcrops. Several quarries have been identified, including the Senator Edwards site in central Florida (Purdy 1975). Newnan horizon hafted bifaces are routinely recovered in shell midden contexts along the middle St. Johns. The lack of toolstone in the middle St. Johns precludes their local production. Lithic provenance studies indicate that chipped stone tools were being imported into the region from West and Central Florida (Endonino 2007).

Mount Taylor (ca. 7300–4600 cal BP). The Mount Taylor culture (ca. 7300–4600 cal BP) has been defined to describe the intensive late Middle Archaic and early Late Archaic occupation centered on the extensive wetlands of the middle St. Johns River, the adjacent Ocklawaha and Wekiva rivers, and associated Atlantic Coastal Lagoon (Goggin 1952; Wheeler et al. 2000). This is an archaeological construct, and it refers to a suite of site types and diagnostic artifacts. Recently, the period has been split into an early Mount Taylor phase (ca. 7300–5600 cal BP) and a late Thornhill Lake phase (5600–4600 cal BP), on the basis of changes in the frequency and style of exotic objects and mortuary traditions (Beasley 2008; Endonino 2010). Although the broad details of lifeways are known for this period, the Mount Taylor culture remains poorly understood for several reasons. Mount Taylor period components are typically buried deeply under later components or submerged under alluvium or peat deposits. Moreover, many sites of this period have been destroyed or impacted by modern land-use practices. The majority of shell mounds were mined in part or whole for road fill during the middle of the 20th century (Milanich 1994).

Settlement patterns during this period are not well known (Wheeler et al. 2000). Seasonality studies of late Middle Archaic sites in the coastal Timucuan Preserve (Russo et al. 1993) suggest that Mount Taylor communities likely had well-established patterns of movement within each region. Although this does not preclude movement either within the middle St. Johns, or to the Atlantic coast or interior, it does suggest that populations were relatively circumscribed. Based on botanical remains and hydrology, Grove's Orange Midden has been interpreted as a multiseasonal occupation (Russo et al. 1992). Based largely on the assumption that shell mounds are villages, it is typically presumed that the large shell deposits throughout the middle St. Johns represent multiseasonal to permanent year-round base camps that articulate with smaller task and season-specific localities (Wheeler et al. 2000). This remains to be tested.

Sites with Mount Taylor components are present throughout the middle St. Johns basin (Sassaman et al. 2000). Although many sites are located adjacent to the main channel of the St. Johns, many others are situated within low-lying swamps or marshes. Wheeler et al. (2000) suggest that there are several general configurations, including ovoid midden-mounds, ridges of shell, complexes of shell fields, ridges, and mounds in addition to small, diffuse middens. The configuration of Mount Taylor occupations is made less clear in multicomponent sites, where Mount Taylor assemblages are partially or completely obscured by later deposits, but are generally characterized by linear footprints (Randall 2010).

It is unclear how these sites are internally organized, and whether there are specific areas for habitation, refuse disposal, or other tasks. Based primarily on stratigraphic inference and non-mounded shell bearing sites, some Mount Taylor occupations appear to be composed of households arranged in a linear fashion (Randall 2010). Few features are known from this time period. Aside from the occasional post-mold, features that have been recorded at large sites such as the Lake Monroe Outlet Midden (8VO53) (Archaeological Consultants and Janus Research 2001) and Fort Florida (8VO48) (Johnson 2005) tend to be large shell-filled basins. Further evidence comes from the Lake Monroe Outlet midden, where lithic reduction tasks were apparently segregated from domestic refuse or processing tasks (Scudder 2001). Similarly, at the Hontoon Island North site (8VO202) primary and secondary midden were separated in space suggesting the presence of discrete habitation and refuse areas (Sassaman et al. 2005). Stratigraphically, Mount Taylor shell mounds are characterized by shell lenses, typically composed of whole and crushed *Viviparus*, *Pomacea*, and bivalve. Strata can be composed of a mixture of these taxa, or as concentrations of single taxa. The addition of sand within shell deposits appears to be a later practice. In many cases individual strata are composed of a single taxon, which may be burned, whole, or crushed. Another feature of Mount Taylor sites is the presence of concreted shell, which can occur either as thick, extensive lenses or as localized conglomerates (Wheeler et al. 2000:145). It has been suggested that concreted shell deposits form by the interaction of ash, shell, and percolating water.

In addition to basal deposits of concreted shell, Mount Taylor sites typically contain saturated or submerged components that appear to have been inundated during or soon after deposition. Due to the cost and time involved in dewatering and excavating saturated deposits, these have only rarely been investigated, but include Salt Springs (O'Donoughue et al. 2011) and Groves' Orange Midden (8VO2601), a Mount Taylor and Orange period site on the eastern shore of Lake Monroe (McGee and Wheeler 1994). Groves' Orange midden, for example, is a segment of the much larger multicomponent Old Enterprise mound and shell field complex (8VO55). Stratigraphic excavations yielded five discrete strata. The earliest primary deposition (Stratum IV) dates roughly between 7000 and 6000 cal BP and is characterized by dense *Viviparus* shell deposits. These early dates are supported by dates clustering around 7300 cal BP from the base of Live Oak Mound and Hontoon Dead Creek Mound (Sassaman 2003b, 2005), indicating that the establishment of wetland habitat and its exploitation by residents of the middle St. Johns occurred by at least 7300 years ago, if not before. At Grove's Orange Midden, this basal stratum underlies a thick peat deposit (Stratum III) which dates from 6000 to 4400 cal BP (McGee and Wheeler 1994). This peat is thought to represent a seasonal marsh, which suggests a high water stand or an increase in the hydroperiod (Randall 2010). Rare artifacts within this stratum attest to shifts in refuse disposal that likely relate to micro-environmental changes. Above this peat deposit is another dense *Viviparus* deposit dating to the end of the preceramic Archaic. These data not only demonstrate the variability in surface waters through time, but also demonstrate that much of the early record of the Preceramic Archaic lifeways is likely submerged and covered along Florida's lakes and rivers.

Ceremonialism was a widespread and prominent component of Mount Taylor lifeways, as evidenced by the construction of monumental shell mounds and mortuary-related sand mounds. Although traditionally viewed as relatively late-period constructions or the result of mundane activities, some Mount Taylor mounds were deliberately constructed as ritual and/or mortuary mounds as demonstrated by early observations by Jeffries Wyman (1875) and C.B. Moore (1999), and more recent excavations at Bluffton Burial Mound (8VO23) (Sears 1960), Mount Taylor (8VO19) mound (Wheeler et al. 2000), the Harris Creek site (8VO24) on Tick Island (Aten 1999), Live Oak Mound (8VO41) (Sassaman 2003b), Hontoon Dead Creek Mound (8VO214) (Sassaman 2005), and the Tomoka Mound complex (8VO81) (Piatek 1994) on the Tomoka River. Although Mount Taylor burials have been recorded in only a few cases, similarities in the form and internal structure of these mounds indicates that many if not all were mortuaries at one point in time (Endonino 2003).

Although only a handful of mounds have been archaeological tested in modern times (Bluffton, Mount Taylor, Harris Creek, Live Oak, Tomoka, Hontoon Island North and Hontoon Dead Creek Mound, Thornhill Lake, Silver Glen Run Locus A), many more no doubt existed prior to their destruction during the 20th century. That many of the mounds contained preceramic deposits was well documented by Jeffries Wyman (1875). Wyman, then curator of Harvard's Peabody Museum, made extensive collections and observations of shell-bearing sites throughout the middle St. Johns River between 1860 and 1873. Through pedestrian surveys and collections, observations of cut-banks, and small excavations, Wyman recorded over 40 ridges, ridge complexes, and conical mounds throughout the basin. Later in the 19th century, C.B. Moore (1999) revisited many of these sites. His more intensive excavations provide both a confirmation of the preceramic origins of many mounds, as well as documentation of the stratigraphic sequences and mortuary nature of these sites.

Most ceremonial mounds share design elements and internal sequences (Endonino 2003; Randall and Sassaman 2005; Wheeler et al. 2000). Many mounds are crescent-shaped ridges, with steeply sloping sides and asymmetrical summits 5 to 11 m tall. Excavations at Hontoon Dead Creek Mound and Live Oak Mound determined that at least these two were erected rapidly, on the order of several hundred years at most, and composed primarily of shellfish remains (Randall 2010). The extent to which these mounds encase earlier mortuaries is unknown. Moreover, it is unlikely that all mounds were constructed this rapidly, or for the same ceremonial purposes.

The construction of mortuary mounds may be a practice as old as the Mount Taylor period. Early (Mount Taylor phase) mortuary mounds are best known from the Harris Creek site (8VO24). At Harris Creek, mortuary deposits have been dated between 7000 and 5900 cal BP. As related by Aten (1999), the Harris Creek mortuary was constructed by emplaced shell and white sand upon a preexisting shell deposit in small scale mortuary events. At least 140 individuals were interred here. Later Thornhill Phase mortuaries such as Bluffton and the Thornhill Lake mounds (8VO58) are round, truncated cones. Like the earlier mortuaries, these mounds tend to be erected on top of existing shell deposits. At Bluffton this layer was intentionally burned (Sears 1960). Earthen mounds of sand (typically brown) or muck were then constructed on this midden. Burials were then placed into these deposits. Although grave goods are rare in early contexts (Aten 1999), Thornhill Lake phase burials (such as the type site) were interred with exotic artifacts. Subsequent to interment, these earthen mounds were frequently capped with shell, which in some cases was clearly excavated from preexisting midden deposits (Aten 1999; Piatek 1994).

The importance of wetlands is evident not only in the placement of sites, but in the subsistence remains. Mount Taylor lifeways were characterized by a fishing and hunting subsistence economy. Faunal analysis at Grove's Orange Midden (Russo et al. 1992; Wheeler and McGee 1994), Lake Monroe Outlet Midden (Quitmyer 2001), Blue Spring Midden B (8VO43) (Sassaman 2003b), and Salt Springs (Blessing 2011) demonstrate the dominance of aquatic species, which could have been acquired from marshes, slackwater lagoons, and sloughs. Although it was once thought that shellfish contributed a small percentage of the diet, recent studies indicate that between 33 and 98 percent of the dietary meat weight was derived from freshwater shellfish. Studies have shown that shellfish diversity varies with site contexts, and may reflect local ecological variations (Quitmyer 2001). A diverse array of fish were collected, including catfishes, sunfish (*Lepomis sp.*), gar (*Lepisosteous sp.*), largemouth bass (*Micropterus salmoides*), and eel. Turtle was also collected, including such species as the soft shelled turtle (*Apalone ferox*), sliders, and mud/musk turtles.

Where waterlogged conditions have enabled the preservation of plant matter, such as at Groves Orange Midden (Newsom 1994; Russo et al. 1992), Salt Springs (Talcott 2011), and Windover Pond (Newsom 2002) a stable pattern characterized by high diversity is established by no later than 9500 years ago. Pulpy fruits such as black gum, prickly pear, saw palmetto, maypop, wild plum, blackberry, persimmon, red mulberry, elderberry and grape appear to have been the most important (Newsom 2002). These fruits were supplemented with starchy seeds such as amaranth, pigweed, and knotweed, as well as the greens from these and other species. Numerous tubers were potentially eaten. Cabbage palm hearts and shelf fungi have also been identified (Newsom 2002).

Mount Taylor period assemblages are typified by mundane and decorative material culture manufactured from locally available bone, fired clay, and wood, in addition to exotic materials (Wheeler et al. 2000). Bones from deer and other terrestrial animals were used to make a variety of tools including gouges, awls, needles, fids, projectile points, and decorative pins. Wooden tools have been recovered from saturated deposits such as Groves' Orange Midden (Wheeler and McGee 1994) and include tool handles and net floats. Fired clay objects of various shapes and sizes have also been recovered from numerous contexts.

Nonlocal materials used to manufacture tools and items of adornment speak to the extensive trade networks in which Mount Taylor culture groups were engaged. Marine shell appears early in the Mount Taylor phase, and demonstrates contact or movement to coastal regions. By the Thornhill Lake phase, marine shell was abundant, and in the case of *Strombus gigas*, was apparently imported from southern Florida. Shell tool assemblages are dominated by woodworking tools, including *Busycon sp.* axes and adzes, as well as celts made from *Strombus gigas* shell. Marine shell was also used to make containers, which are often recovered with residue adhering to the interior surfaces. These are preferentially made from left-opening whelks, and may have been used for medicinal or ritual beverages (Sassaman et al. 2011b). Decorative shell artifacts are also typical, and include marine shell beads and plummets made from large whelk columella, as well as decorative shells such as *Oliva sp.* Shark teeth are often recovered. Many have been drilled to facilitate hafting for use as a tool or as personal adornment. Contact with the interior and west coast is demonstrated by the presence of lithic materials of nonlocal origin (Endonino 2007). There is no source for raw material for chipped stone tools in the St. Johns basin, and many artifacts appear to have been traded into the region as performs and finished forms. Hafted bifaces are consistent with those of the Newnan horizon. Aside from hafted bifaces, some Mount Taylor lithic assemblages contain microlithic tools that appear to have been used for the production of objects, potentially marine shell beads (Randall 2010). These appear to date to the Thornhill Lake phase based on excavations at Lake Monroe Outlet Midden (ACI and Janus Research 2001).

The presence of ground stone beads and bannerstones provides evidence for contacts far afield during the Thornhill Lake phase. Groundstone beads have been recovered from several mortuary and cache contexts, (Thornhill Lake mounds 1 and 2 and Coontie Island respectively) (Clausen 1964; Moore 1999). Although their origins are unknown, they are quite similar to tubular beads produced in Mississippi and the Mid-south during the Middle Archaic. Bannerstones have been recovered from several mound contexts, including Thornhill Lake, Tomoka Stone, and Coontie Island. The forms are consistent in form and raw material with those manufactured in the middle Savannah River in Georgia and South Carolina (Sassaman and Randall 2007).

Orange (4600–3600 cal BP) and Early St. Johns (3600–2800 cal BP). The appearance of pottery in shell middens of the St. Johns River and the Atlantic coast signals the end of the preceramic traditions and the beginning of the pottery-making traditions. Orange fiber-tempered pottery has been dated as early as 4800 years ago in the lower St. Johns, although pottery does not appear in the middle St. Johns until 200 years later (Sassaman 2003a). By 3600 years ago, fiber-tempered pottery ceases to be manufactured, signaling the end of the Orange period, and is wholly replaced by spiculate-pasted wares. Once thought to be diagnostic of the St. Johns period, radiocarbon dates (Sassaman 2003a) and paste characterization studies (Cordell 2004) demonstrate that spiculate pottery was produced during the Orange period and continued through the end of the Late Archaic and into the St. Johns Period.

Orange period lifeways have been portrayed as continuing the basic trends set in motion during the preceding Mount Taylor period (Milanich 1994:86). Excluding the production of pottery, and new hafted biface types such as the Culbreath, Lafayette, Clay and Levy varieties, continuity is suggested by the continued use of marine shell and stone tools, although marine shell does appear in reduced frequency at some sites. As evidenced by subsistence data from Blue Spring Midden B (Sassaman 2003b) and Grove's Orange Midden (Russo et al. 1992), communities continued to exploit aquatic habitats, routinely collecting from local shellfish beds and capturing fish and turtles.

The economic importance of wetlands is demonstrated by the continued focus of settlement adjacent to the river. Orange sites are most likely to be found along productive wetlands and marshes, often in the same locales as earlier preceramic components, while there is a decrease in sites in the interior forests of northern Florida. The more numerous and larger Orange components may very well reflect an overall increase in population. This observation, however, must be tempered by the fact that preceramic components may not be adequately recorded due to inundation, stratigraphic ambiguity, or a lack of diagnostic artifacts.

Although there certainly is significant continuity, divergence in traditions within the St. Johns is evident during Orange times (Sassaman 2004). The upper St. Johns is characterized by smaller sites that may, when taken as a whole system, constitute year-long settlement (Sigler-Eisenberg et al. 1985). In the lower St. Johns, large and presumably multi-seasonal settlements are surrounded by smaller, probable fish-processing stations (Russo et al. 1993). In addition to these habitation areas, large shell rings have been identified both at the mouth of the St. Johns and along the coast (Russo and Heide 2001). These sites were likely accretionally but intentionally constructed, and were the loci of communal feasting and ritual activities (Russo 2004; Saunders 2004).

Settlement in the middle St. Johns has been less well documented, but it appears to replicate Mount Taylor site types, characterized by a dichotomy between extensive middens, mound complexes with abundant pottery, and small task sites. Because these sites have not been routinely investigated, data on their internal organization and function are scarce. Sassaman (2003c) has identified a possible Orange period semi-circular compound at Blue Spring Midden B. The compound was situated above a Mount Taylor midden and adjacent to a Mount Taylor mound. At least three households and their associated refuse piles were inferred. Although seasonality data have not been forthcoming, the site was repeatedly occupied.

Emerging new data, primarily from the Silver Glen locality, indicates that Orange communities in the middle St. Johns actively mounded shell as their coastal neighbors did. In general, Orange pottery at mound sites is rare. At Bluffton the pottery was deposited adjacent to and not on top of the mound (Wheeler et al 2000). In excavations at Live Oak Mound, Sassaman (2003c) recovered only a small number of sherds, all from near the surface. However, large quantities of decorated Orange pottery are present at several mounds, including the Mouth of Silver Glen Springs Run (8LA1), Harris Creek, Enterprise, and Orange Mound. In most cases it is unclear if the mounds were in the shape of a linear ridge or a U. Based on the observations of Wyman, however, the mound at the mouth of the SGS run was U-shaped, although it remains to be determined when it attained that configuration (see Chapter 3).

Orange fiber-tempered pottery has been treated primarily as a chronological marker. Bullen (1972) constructed five subperiods, based on changes in vessel construction and surface decoration. The unilineal sequence consisted of a transition from Orange Plain to Incised (Orange Incised and Tick Island) wares, which were eventually replaced by spiculate-tempered St. Johns Incised vessels. However, radiocarbon dates have shown that variation in tempering agents, vessel form, and surface treatment likely reflect spatial variation in the production and use of pottery (Cordell 2004; Sassaman 2004), and not necessarily temporal trends, as once thought. Sassaman (2004) suggests that village sites such as Blue Spring Midden B are dominated by plain pottery that was rarely used over fires, while large and complex sites such as Harris Creek and Silver Glen Run are dominated by incised vessels that were routinely used over fire. He suggests, as Saunders (2004) does for the coastal Orange shell rings, that the different distribution likely represents different social contexts, where plain pottery was used in mundane contexts, and incised pottery was used primarily during ceremony and communal feasts. Recent dates from 8LA1 on Tick Island Incised components indicate this variant post-dates classic Orange Incised vessels, and may be associated with domestic and ritual contexts (see Chapter 6).

The recent upheaval in the chronology and typology of fiber- and spiculate-tempered wares has left an approximately 1000-year gap between the Orange and St.

Johns I periods. A “Transitional” period was defined by Bullen as a bridge between primarily fiber-tempered assemblages and incised spiculate-tempered wares (Milanich 1994:88). Isolating sites of this period has remained problematic (Miller 1998:76), likely because many of the wares thought to occur after the Orange period are actually coeval. Although the term “Transitional” should be discarded, there is a need to document sites of this period. An early date on a spiculate-tempered assemblage at the Joseph Reed Shell Ring (8MT13) in southern Florida indicates that this interval will likely be populated with components as more dates are acquired (Russo and Heide 2002).

St. Johns (ca. 2800–500 cal BP)

Although St. Johns pottery dates as early as 4400 cal BP, fully developed St. Johns lifeways began around 2800 cal BP, and continued into European contact. The archaeological culture was defined by Goggin (1952), who used changes in pottery styles to identify subperiods. The St. Johns I (ca. 2800–1300 cal BP), is typified by plain “chalky” spiculate-tempered wares, and the St. Johns II (ca. 1300–500 cal BP), typified by plain and check-stamped varieties. These ceramic types are formally referred to as St. Johns Plain and St. Johns Check Stamped, respectively. Additional subperiods have been identified by the presence of foreign wares or local copies of them, as well as changes mortuary ritual (Milanich 1994:247). As Miller (1998:79) notes, however, these divisions are not easily traced because the diagnostic artifacts or sites are rare.

Although there are numerous changes in social organization, material culture, and ceremonialism that were incorporated from external contacts, the St. Johns period may be marked by conservatism (Miller 1998:78). In general it is assumed that along the St. Johns River, St. Johns I and to a certain extent St. Johns II lifeways continued seemingly unchanged “from that of their late Archaic, Orange-period predecessors” (Milanich 1994:254). This assumption is based primarily on the fact that St. Johns I components are likely to be found on sites with Orange components, and this trend continues with a similar frequency of reoccupation for St. Johns II components (Miller 1998; Sassaman et al. 2000). However, there have been very few archaeological investigations of these post-Archaic components. The continuity made apparent by the reuse of locations may be superficial at best. In general, however, villages, short-term task sites, and large ceremonial mounds are likely present along much of the St. Johns River and its tributaries, and along the coastal lagoons from Jacksonville into Brevard County. Although equally distributed on the coast and along the St. Johns, St. Johns period sites are also located in interriverine localities. Increases in population from Orange to St. Johns II times are suggested by increases in sites per century. Unfortunately, village contexts have rarely been excavated, so it is unknown how large the residential populations of each these places may have been, nor how they may have been structured.

Continuity with Orange period subsistence practices is a likely possibility. Coastal assemblages are dominated by oyster and coquina, in addition to estuarine fishes (Milanich 1994: 257). Subsistence data from the St. Johns period wet-site deposits at 8VO202 on Hontoon Island indicate that populations continued to focus on the collection of aquatic resources, such as gar, catfish, largemouth bass, alligator, and turtle, in addition to *Viviparus* and bivalve (Wing and McKean 1987). A wide array of plants were also exploited, including many that were collected during the preceding Archaic (Newsom 1987). Cultigens that supported large populations and complex forms of social organization elsewhere in the Southeast occur in relatively limited frequencies. Bottle gourd (*Langeria siceria*) seeds and rind fragments and *Cucurbita pepo* gourd fragments were recovered in St. Johns II contexts, but these were likely used for containers or net floaters. Maize, a staple throughout much of the Southeast by St. Johns IIb times, was present in only historic contexts. Cultivation or encouraged gardening of cornmay have been practiced, but it does not appear to have been widespread or intensive in the middle St. Johns.

Changes in material culture throughout St. Johns I and II times were primarily restricted to pottery decoration and hafted biface types (Milanich 1994:247, 263). Hafted bifaces were typically small and crude, and include the Jackson, Florida Copena, Bradford, Columbia, Broward, Taylor, Westo, Florida Adena, Gadsen, Sarasota, and Ocala types (Bullen 1975). Plain St. Johns wares dominate St. Johns I components. Locally produced Dunns Creek Red vessels were produced during Ia and Ib times, while during Ia copies of Deptford and Swift Creek and during Ib Weeden Island vessels were produced. These often were deposited in mortuary contexts. At ca. A.D. 750, potters began to apply check-stamped designs with wooden paddles. During IIa times, late Weeden Island pottery and copies were made, while elements of the Southeastern Ceremonial Complex are evident in IIb assemblages. During St. Johns IIa or IIb times, there is a shift to the use of small hafted bifaces such as Pinellas, Ichetucknee, and Tampa Points. Other tools found throughout St. Johns period assemblages were shell adzes, celts, picks and hammers. Bone tools include a variety of awls, pins, pendants, beads, and fishhooks.

Ceremonial and political life appears to have been transformed in relation to external contacts (Goggin 1952, Milanich 1994:260-262). Mounds of the St. Johns I period were low, truncated cones constructed of sand. Bundle burials, extended interments, and cremations were placed into these mound. Many mounds were reused for multiple interments, which may indicate that interred individuals were members of the same lineage, as in Weeden Island mounds. During the St. Johns Ia period, larger mounds were constructed, and exotic items such as galena and copper were interred, along with locally made St. Johns Plain and Dunns Creek Red pottery. Towards the end of Ia, Hopewell influences are evident in the construction of log tombs. Mounds of Ib age show evidence for Weeden Island influences. St. Johns IIa mortuary practices appear similar to earlier practices in that they continue to be used for multiple, likely kin-based burials (Milanich 1994:268).

Beginning with the St. Johns IIb subperiod, the construction of mounds takes on a different character, and is clearly influenced by Mississippian cultures to the north and west. Although it is unknown precisely what level of social organization was present at this time period, the symbolism and quantity of material culture is similar to chiefly societies elsewhere in the Southeast at this time. At least three large pyramidal mounds were present in the middle St. Johns basin, including Shields, Mt Royal, and the Thursby

Mound, located across the St. Johns channel from Hontoon Island. These sites were large earthen works, likely constructed in stages. C. B. Moore (1999) excavated all of these sites, and recovered caches of copper, galena, silver and gold, *Busycon* shells, greenstone celts, and clay vessels and effigies in addition to scattered or poorly preserved human remains.

CONCLUSION

The configuration of the Silver Glen Springs watershed today reflects a complex and interwoven history of natural and cultural processes reaching back nearly 12,000 years. The most visible components of this landscape are the four known shell and sand mounds that were constructed there. Yet the preponderance of data indicates that most portions of the watershed were incorporated into the daily and ritual lives of its inhabitants. Although fragmented by recent land use practices, the area encompassed by the Juniper Club was among the more intensively utilized areas since about 6000 years ago. It is to the archaeological investigation of these resources that we now turn.