

Glass Beads and Spanish Shipwrecks: A New Look at Sixteenth-Century European Contact on the Florida Gulf Coast

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Accepted: 14 November 2017 / Published online: 19 November 2018
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Abstract Despite the considerable amount of research devoted to the study of 16th-century contact between Native Americans and Spaniards in Florida, little attention has been given to the impact of Spanish shipwrecks on the lives and material culture of the Florida Indians. Spanish land-based expeditions are traditionally presented as the principal means of European contact with Native Americans in Florida and as the primary source for European objects, such as glass beads. This has created a misleading picture of what was really happening in Florida during the 16th century. Examination of Spanish sailing routes, the types of artifacts recovered archaeologically from the wreck sites of homebound Spanish ships, and salvage activities of the Florida Indians reveals that Spanish shipwrecks were probably responsible for most of the historical artifacts found on Florida archaeological sites with 16th-century European components. This suggests that the interactions between Spaniards and Florida Indians had a far greater intensity and complexity than has generally been supposed.

Extracto A pesar de la considerable cantidad de investigación dedicada al estudio del contacto, en el siglo XVI, entre los indígenas y españoles en Florida, se ha prestado poca atención al impacto de los naufragios españoles en la vida y la cultura material de los indios de Florida. Las expediciones terrestres de los

españoles se presentan tradicionalmente como el principal medio de contacto de los europeos con los indígenas en Florida y como la fuente principal de los objetos europeos, tales como cuentas de vidrio. Esto ha creado una impresión engañosa de lo que realmente estaba sucediendo en Florida durante el siglo XVI. Al examinar las rutas de navegación de los españoles, los tipos de artefactos recuperados arqueológicamente de los sitios de naufragios de buques españoles en camino a casa, y las actividades de salvamento de los indios de Florida, se revela que los naufragios españoles probablemente eran la fuente de la mayoría de los artefactos históricos encontrados en sitios arqueológicos de Florida con componentes europeos del siglo XVI. Esto sugiere que las interacciones entre los españoles y los indios de Florida tuvieron una mayor intensidad y complejidad que generalmente se ha pensado.

Résumé Malgré le grand nombre de recherches consacrées à l'étude du contact entre les Amérindiens et les Espagnols en Floride au 16e siècle, l'impact des naufrages espagnols sur la vie et la culture matérielle des Indiens de Floride a attiré peu d'attention. Les expéditions terrestres espagnoles sont traditionnellement présentées comme le principal moyen de contact européen avec les Amérindiens de Floride et la première source d'acquisition d'objets de l'Europe, dont des billes en verre. Cela a dressé un tableau trompeur de ce qui se passait réellement en Floride au 16e siècle. L'examen des routes maritimes espagnoles, des types d'artefacts archéologiques recueillis des épaves des navires

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espagnols en partance pour l'Europe et des activités de conservation des Indiens de Floride révèle que les naufrages espagnols représentaient probablement la principale source d'approvisionnement des artefacts historiques découverts dans les sites archéologiques de Floride renfermant des éléments européens du 16e siècle. Cela suggère que les interactions entre les Espagnols et les Indiens de Floride étaient plus intenses et complexes que ce qui est généralement supposé.

Keywords glass beads · Spanish shipwrecks · Florida Gulf Coast · 16th century · Spanish entradas · contact period sites · burial mounds · rock crystal · sailing routes · New Spain · Calusa · Old World disease · Renaissance jewelry · gold artifacts · silver artifacts

Introduction

Traditionally, most archaeologists and historians have characterized the contact or interaction between Spaniards and Native Americans in 16th-century Florida as taking place primarily within the context of periodic Spanish land-based expeditions. These overland expeditions, or *entradas*, have been portrayed not only as the major means of contact between Spaniards and Native Americans, but also as the primary source of European artifacts, or “contact material,” found at Native American archaeological sites having 16th-century European components. Most notably, these expeditions include those of Pánfilo de Narváez in 1528, Hernando de Soto in 1539, and, to a lesser extent, Tristán de Luna y Arellano in 1559.

The perspective presented here is that Spanish shipwrecks offer a different and probably better explanation for the presence of the majority of European materials found at Florida archaeological sites commonly known as 16th-century “contact sites.” In most written works, when shipwrecks are mentioned at all, they are usually treated as minor players contributing little to the historical archaeological record. Yet, throughout the 16th century, Spanish ships were wrecking on the Florida coast year after year and often multiple times a year, providing the Indians with a wide array and regular supply of European materials of every description. These objects were traded widely or sent as tribute from one Indian village to another all across Florida, making it nearly impossible to connect specific European artifacts with Spanish expeditions.

Glass beads are the primary focus of this analysis, since they are among the most numerous and diagnostic types of historical artifacts found on Florida archaeological sites having 16th-century European components and are especially useful for providing chronological dates. As a rule, when glass beads are found on archaeological sites they are perceived as quintessential objects of trade and have become synonymous with the term “trade beads.”

Commonly used terminologies, such as “contact sites,” “contact material,” “trade beads,” and “trade kits,” have often masked the diversity of ways in which Spaniards and Florida Indians interacted in the 16th century, as well as the ways in which European objects were acquired. Since Spanish ships wrecked with great frequency on the Florida coast, native peoples had repeated opportunities for contact with large numbers of Spanish shipwreck survivors. The result was a greater intensity and complexity of interaction than has traditionally been portrayed. While the primary focus here is on European and European-derived artifacts recovered from archaeological sites in counties bordering the Florida Gulf Coast, these implications are relevant for cultural and historical dynamics elsewhere in coastal Florida and the Southeast.

Conventional View

It is widely accepted by most researchers that nearly all of the European artifacts found on southeastern U.S. archaeological sites dating to the first half of the 16th century originated from Spanish overland expeditions, primarily those of Pánfilo de Narváez and Hernando de Soto. This is based on the idea that the historical metal and glass artifacts recovered from these sites were brought along by the Spaniards and traded to the Indians. These artifacts then have been used as evidence for indicating points of contact between Spaniards and Native Americans, often as a way of reconstructing or refining the routes followed by the expeditions. Ohlson (2014:34), for example, notes: “Archaeologists are cautious about designating a site as one of De Soto’s steppingstones across the Southeast, because getting one site wrong can throw off the rest of the route.”

In a study of archaeological and historical sites in the Florida Panhandle, Marrinan et al. (1990) suggested that the European artifacts from St. Marks Wildlife Refuge Cemetery site (8WA15) were introduced by the

expedition of Pánfilo de Narváez. Marvin Smith (1987:45) wrote that, within the interior Southeast, European artifacts from contact sites dating to 1525–1565 would include only goods introduced by the expedition of Hernando de Soto. Jeffrey Brain (1975), Hudson et al. (1989a), Milanich and Hudson (1993), and many others have identified a wide variety of European artifacts as evidence of Native American contact with De Soto that can be used to trace his path more accurately through the Southeast. Hudson et al. (1989b), Langford (1990), and Linden (2013) have identified certain historical artifacts, including an Aztec-crafted copper plate, as originating from the expedition of Tristán de Luna y Arellano.

Glass beads have often been the artifact category most closely associated with the way these types of archaeological sites are understood and interpreted. Since it is well known from various written accounts that Europeans gave or traded them to American Indians, glass beads are almost always referred to as trade items when found in archaeological contexts (Griffin and H. Smith 1948; Goggin 1960; Karklins 1967; Spector 1976; M. Smith and Good 1982; M. Smith 1987; Milanich and Hudson 1993; White 2015; Worth 2016). Mitchem (1989b:335), for example, in writing of the Ruth Smith (8CI200), Tatham (8CI203), and Weeki Wachee (8HE12) burial mound sites, states:

The similarity of European bead assemblages from the three sites strongly suggests that the people buried in all three mounds were contacted by the same Spanish expedition(s). The glass beads leave no doubt that contact occurred during the early sixteenth century, and the geographical location of the sites indicates that the two most likely sources of the beads were the expeditions of Pánfilo de Narváez in 1528 and Hernando de Soto in 1539.

While this conventional interpretation of glass beads as trade material is extremely widespread, some researchers have noted that certain other types of European artifacts, primarily objects of silver and gold, may have come from shipwrecks rather than Spanish expeditions (Griffin and H. Smith 1948:30; Milanich 1995; McGuire 2014). This arises from the assumption that, since the Spaniards were risking life and limb in the Americas to obtain precious metals, they had no interest in trading or giving silver and gold to the Indians. Quite

possibly the only recorded occasion of a Spaniard giving away an object containing precious metal was in present-day South Carolina, where it was said that De Soto gave a native chief a feather plume decorated with silver (Bourne 1904:90).

Griffin and H. Smith (1948:30) discussed this notion of separate origins for precious metals and glass beads when they wrote that European artifacts from the Goodnow Mound (8HG4) “suggest trade rather than salvage from shipwreck; this is particularly true of the quantities of small glass beads. The silver may, however, represent salvaged material.” This interpretation is affirmed by Mitchem (1989a:510), who, in making a link between European artifacts from Tatham Mound (8CI203) and the De Soto expedition, states that

[s]ome of the Tatham material, especially the silver and gold, may have been salvaged from ships wrecked while transporting it back to Spain from South America. However, a shipwreck origin for the glass beads seems unlikely, because these materials would probably not be carried in quantity aboard a ship traveling toward Spain.

A similar interpretation was presented by Mitchem (1989b:326–328) in his discussion of the Weeki Wachee Mound (8HE12), a Safety Harbor period burial site that produced historical artifacts, including 127 glass beads, 151 silver beads, and an amber bead. Mitchem suggested that the glass beads came from one or more Spanish expeditions, and the material in the silver beads possibly came from shipwrecks. The underlying assumption again is that glass beads did not come from salvaged Spanish shipwrecks or from shipwreck survivors.

In the same way, Fairbanks (1968:14) linked glass beads (and rock-crystal beads) exclusively with Spanish overland expeditions when he stated that Florida cut-crystal beads “are not found on sites with Nueva Cadiz Plain or Nueva Cadiz Twisted beads [emphasis in original].” This appears to be saying that Nueva Cádiz beads, commonly believed to date to around 1500–1550, were introduced by different Spanish expeditions than were the later Florida cut-crystal beads, assumed by most to date to 1550–1600. Yet, there is little doubt that Florida cut-crystal beads are contemporaneous with Nueva Cádiz beads. There are at least 12 archaeological sites across Florida from which both types of beads have been recovered (Allender 1995, 2016).

Since this is at odds with traditional interpretation, it may be helpful to discuss briefly the probable origins and dating of Florida cut-crystal beads. It is well known that pre-Columbian societies in Mexico and South America had great expertise in the manufacture of objects using rock crystal. An illustration by Von Winning (1968:plate 357) shows a late Postclassic necklace from southwest Chiapas in Mexico that includes 37 rock-crystal beads. Other examples of pre-Columbian manufacture of rock-crystal beads include a necklace recovered from Chichén Itzá in Yucatan, Mexico (Kelemen 1943:plate 244a), a necklace from Chavín de Huántar in Peru (Raulet 1999:31), and a string of rock-crystal beads made by the Tairona peoples of Columbia (Coles and Budwig 1990:48).

European lapidary experts skilled in the art of cutting rock crystal began arriving in Mexico shortly after the Spanish conquest, and the Mexican Indians added their own high level of lapidary skills to those of the arriving Europeans (Díaz del Castillo 1938:546; Leon-Portilla 1962:19; Toussaint 1967:67). All this suggests that Florida cut-crystal beads had their origin in Mexico and South America, and their manufacture probably dates from the 1520s, making them contemporaneous with Nueva Cádiz beads. John Goggin (1960:28) noted that, since the lapidary work used to make Florida cut-crystal beads was so expensive, the Florida Indians probably did not obtain them through trade, but by salvaging shipwrecks.

A Different Perspective

The idea that the Florida Indians possibly obtained gold and silver from shipwrecks, while glass beads and all other European objects came from Spanish *entradas*, is an artificially created and at least partially inaccurate distinction. A careful review of the most reliable primary historical accounts shows there actually was little recorded trade between Native Americans and early 16th-century Spanish expeditions. Relations between the two groups were usually hostile, and, due to the warlike conditions surrounding nearly all of the Spanish expeditions, there were relatively few recorded instances of trade.

This was especially true of the Hernando de Soto expedition, which has often been presumed responsible for producing nearly all of the 16th-century Spanish artifacts found at Native American archaeological sites in the Southeast. Yet, the manner in which the De Soto

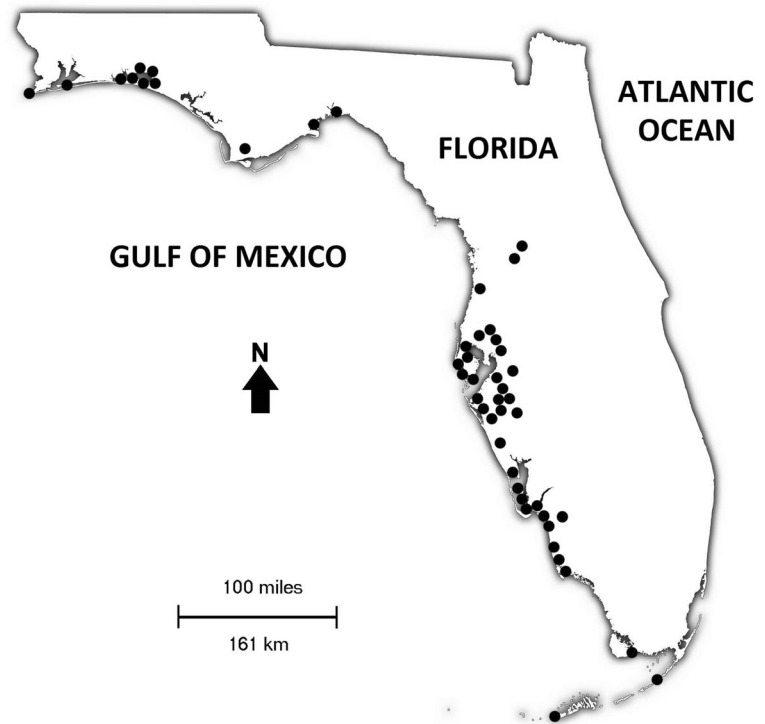
expedition interacted with the Indians calls this into question. Hostilities commenced almost immediately after De Soto and his men set foot in Florida, and over time these hostilities evolved into near-constant warfare (Bourne 1904; Milanich and Hudson 1993). The De Soto expedition was predatory in nature and conduct, and as the Spaniards wound their way through Florida and the southeastern U.S. they brutally terrorized the Indians and made endless demands upon them. Wherever De Soto encountered Indians he demanded food, blankets, hides, clothing, and captives. What the natives failed to volunteer, the Spaniards took by force (B. Smith 1866; Bourne 1904).

None of this created hospitable conditions for trade. The combination of hostile relations and lack of historical evidence suggests that, prior to the arrival of Pedro Menéndez de Avilés in 1566, there was little direct Spanish trade with Florida Gulf Coast Indians. The warlike character of both the Narváez and De Soto expeditions most likely acted as an effective barrier to Spanish–Indian trade. The most reliable accounts record that Narváez gave gifts to the Florida Indians on just two occasions, De Soto presented gifts on a single occasion, and the De Luna account records no trade in Florida at all (B. Smith 1866; Bourne 1904; Bandelier 1922; Priestley 1928). Though Menéndez gave many gifts to the Indians at Calos and Tocobaga, his venture on the Florida Gulf Coast was fairly short-lived, lasting from 1566 until 1570 (Hann 1991). Clothing was probably the most common gift, while other items would have included food, linen, hatchets, knives, hoes, scissors, beads, bells, mirrors, and a variety of other goods (Connor 1925; Solís de Merás 1964; Purdy 1977).

All of this suggests that the Indians on the Florida Gulf Coast acquired relatively few European goods from Spanish land-based expeditions. While there really is little question that these expeditions left behind (whether voluntarily or not) objects, materials, and trade goods that ended up in the archaeological record, the spatial distribution of archaeological sites on the Florida Gulf Coast having 16th-century European components (Fig. 1) indicates a different manner of acquisition. It suggests that shipwreck salvage was primarily responsible for the presence of most European and European-derived items, including glass beads (Allender 1995).

It is somewhat surprising few researchers or historians have mentioned this as a possibility. One exception is Hale Smith (1971:60–61), who wrote that, during “the Early Historic Period, 1500–1600, trade goods, although present, were not coming into Florida in any

Fig. 1 Spatial distribution of archaeological sites on the Florida Gulf Coast with 16th-century European components. (Drawing by author, 2016.)



great quantity. The Indians probably received the bulk of European materials from the wrecks of various vessels.” Another exception is Milanich (1995:41), who stated that many European artifacts “came from wrecked Spanish ships that were salvaged by native people.”

Sailing Routes and Shipwrecks

Throughout the 16th century, most of the ships that sailed in the northern Gulf of Mexico were a part of the expanding Spanish commercial trade with Mexico (or New Spain). During the first half of the century, homebound ships usually sailed from the port of Vera Cruz for Santo Domingo before making the final voyage to Spain. By mid-century, however, Havana was eclipsing Santo Domingo as the most prominent transshipment point and soon became the most important distribution and rendezvous center for homebound Spanish ships (Haring 1918; Parry 1966; Andrews 1978:58; McAlister 1984). This suggests that, with the exception of the occasional ship blown off course by gales or contrary winds, any Spanish vessel that wrecked on the Florida Gulf Coast was most likely sailing from Mexico.

Formal commercial trade between Spain and Mexico began in 1522 when the first vessels to haul cargo sailed from Vera Cruz. Loaded onto three caravels, the consignment included treasure taken from Montezuma and the personal loot of Hernán Cortés and his soldiers (Haring 1915:441; Díaz del Castillo 1938:373). From then until the end of the 16th century, exports from Mexico increased steadily. In the 1560s, annual or nearly annual convoys were organized for ships making the round trip between Spain and Mexico, and also *Tierra Firme* (or South America). These armed convoys, known respectively as the New Spain and *Tierra Firme* fleets, usually met up in Havana, where they obtained supplies and took on more cargo for the return voyage to Spain (Haring 1918). The homebound sailing routes for the New Spain and *Tierra Firme* fleets are shown in Fig. 2.

Since navigational instruments in the 16th century often were less than precise in determining the true position of a ship at sea, sailing routes in the Gulf of Mexico and Caribbean often lay close to or within sight of land (Parry 1969:84; Arnold and Weddle 1978:178). Ship navigators did not deliberately sail close to land or “hug the shore,” but capes and headlands were viewed often enough to make sure of the ship’s position (Taylor 1958:63; Arnold and Weddle 1978; Hoffman 1980:6;

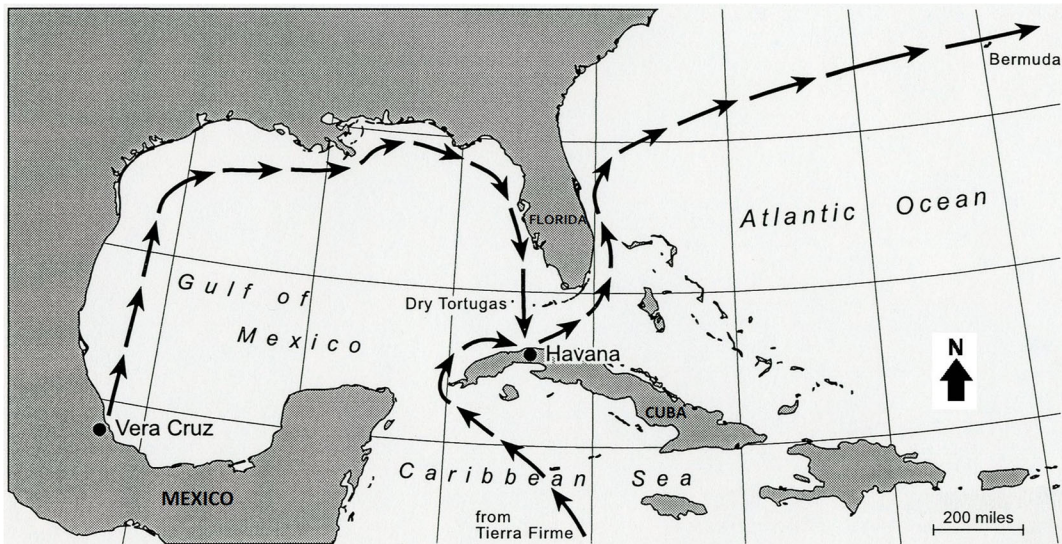


Fig. 2 Sailing routes of the homebound New Spain and Tierra Firme fleets. (Drawing by author, 2016.)

Ware 1982). “Dead reckoning,” the most basic form of navigation, was used by ship pilots to determine position, estimates of speed, direction sailed, and time elapsed since the last known or estimated position (Haring 1918; Taylor 1958; Phillips 1986:130).

The typical sailing voyage from Vera Cruz to Havana was not an easy or direct one, and for the officers and crews who sailed in the New Spain fleets it was considered the worst part of the entire round trip (Earle 1992:70). The fleets sailing from Mexico were usually forced to sail north to northeast in a tedious beat against the trade winds until eventually sighting land at the northern limits of the Gulf of Mexico. Once the coast was sighted, the ships would steer easterly along the northern coast and then south past Tampa Bay, until finally exiting the gulf into the Straits of Florida for the final tack to Havana (James Imray & Son 1863; Romans 1962; Roberts 1976). According to archival research compiled by Chaunu and Chaunu (1956, 1957), the average sailing voyage from Vera Cruz to Havana lasted an exhausting 34 days, and in some cases it took nearly two months (for an evaluation of this sailing route and its varied descriptions see Allender [1995]).

The prevailing northeasterly trade winds usually posed the greatest challenge for any ship sailing from Vera Cruz to Havana. A ship sailing from west to east in the Gulf of Mexico had to confront the same headwinds as a ship returning from the Indies to Europe (Horsfall 1948; Parry 1969:181; Andrews 1978). Since ships eastbound from Vera Cruz were unable to sail directly

into the wind, the same problem faced by any sailing ship, they were forced, in effect, to sail around it (De Camp 1963:121–122; Hoffman 1980:6). At times the northeasterly trade winds also forced ships sailing from Tierra Firme and other Caribbean ports to tack far to the north to northwest in the Gulf of Mexico after passing the west end of Cuba, before steering south using currents along the southwest Florida coast for the final course to Havana (Hakluyt 1962:38).

Due to its close proximity to the sailing route from Mexico, the Florida Gulf Coast became the final resting place for many of these homebound Spanish ships (Connor 1925). The British naval commander and explorer John Hawkins noted in 1565 that this region was “so dangerous (by reports) that no ship escapeth which cometh hither” (Hakluyt 1962:38–39). Hawkins obtained reports from soldiers under the command of French explorer René Laudonnière that the lower southwest Florida coast was “dangerous, by means of sundry banks, as we also have found the same; and there finding masts which were wracks of Spaniards comming from Mexico” (Hakluyt 1962:48).

In 1567, when Pedro Menéndez de Avilés was exploring the region of Tocobaga (or Tampa Bay), he came across a Portuguese trader who had been shipwrecked there some six years earlier. The trader had been in a ship sailing from the port of Campeche for an unknown destination in New Spain when a storm blew it off course and forced it ashore near Tampa Bay (Solís de Merás 1964:225–226). The leader of the Tocobaga had

been responsible for killing many Spaniards who had survived shipwrecks in the region, and the trader was the last one who remained alive, possibly due to his skills as a cook (Connor 1925:43; de Carballido y Zúñiga 1951:137). The identity of the ship sailing from Campeche is unknown, yet it shows that not only were the Florida Indians recovering goods from ships that have never been identified, but also that ships sailing from Mexico to Spain were not the only ones wrecking on the Florida Gulf Coast.

While 16th-century Spanish authorities and other sources stated clearly that many ships were lost on the Florida Gulf Coast, the specific numbers and identities of these ships are impossible to determine. One major difficulty is that, when a ship sank, the records concerning its loss were often vague or imprecise. Reports included descriptions, such as lost “in the ocean,” “in the Azores,” “in the Bahama Channel,” or “on the coast of Florida” (Chaunu and Chaunu 1955a, 1955b). If a ship was reported lost “on the coast of Florida,” in theory this could have been anywhere from the Mexican coast to as far north as Labrador (Lowery 1959a:123; Ste. Clair 1997:9). Another challenge, and probably the most significant, is that surviving records for the first half of the 16th century, in particular, contain many omissions about from where a ship was sailing and whether it was lost before reaching Spain (Chaunu and Chaunu 1955a). Add to this the number of homebound Spanish ships simply lost without a trace, and the result is that the actual numbers and identities of ships lost on the Florida Gulf and Atlantic coasts will never be known.

Native American Salvagers

Possibly the earliest record of shipwreck salvage on the Florida Gulf Coast is found in the accounts of the Narváez expedition of 1528. Narváez and his men landed near Tampa Bay and soon afterward entered an Indian village where there were large numbers of wooden boxes. They also came across pieces of iron, objects of gold, feather headdresses, shoes, linen, cloth, and canvas. A short time earlier, in another village, they had seen “a golden rattle” (Bandelier 1922:10,12–13). The Spaniards concluded that the goods had come from Mexico, and when they asked the natives about their source “they told us by signs that they had found it in a vessel that had been lost on this coast and in that bay”

(Bandelier 1922:13). The identity of this lost Spanish vessel is unknown, yet the descriptions of the objects are intriguing, since feather work, woven cloth, shoes, objects of gold, and golden rattles were among the Aztec treasures Hernán Cortés shipped from Mexico to Spain in the mid-1520s (Anderson 1941).

In a petition sent to the Spanish Crown in 1574 describing the murderous behavior of Indians living on the Florida coasts, Pedro Menéndez de Avilés stated:

[A]ll the Indians, from the river of Mosquitos, at the beginning of the Bahama Channel, as far as Los Mártires, and returning up to the bay of Tocobaga ... have broken the peace many times, slaying many Christians. ... They have been accustomed since the Indies have been discovered to kill all the people from the ships which are, the most of them, lost in this district. (Connor 1925:33)

According to Menéndez, one of the most knowledgeable and expert mariners of his day, Spanish ships had been wrecking on the Florida coasts since the earliest days of discovery in the Americas. Most of these ships had been lost in areas extending from present day Ponce de Leon Inlet (“river of Mosquitos” in de Villalobos [1984:184] and Lyon [1990:124]) southward along the southeast Florida coast, across the Florida Keys (“Los Mártires”), and north to the region of Tampa Bay (“bay of Tocobaga”).

In 1513, the expedition of Juan Ponce de León may have discovered signs of these early Spanish shipwrecks while exploring the southwest Florida coast. The expedition encountered a Florida native able to speak Spanish who said the leader of the Calusa possessed gold and desired to barter with it (Lowery 1959a:142). An even stronger hint at early shipwreck salvage is found in the brief account of the pilot Diego Miruelo who sailed from Cuba on a trading cruise in 1516. Miruelo sailed directly for the Florida coast and ended up in what generally is believed to be Pensacola Bay, where he obtained gold from the natives in exchange for items of glass and iron (de Carballido y Zúñiga 1951:15).

Many of the coastal Indian groups probably engaged in shipwreck salvage, with goods from wrecked ships making their way all across Florida. In his description of the Florida Indians, René Laudonnière observed: “[T]here is found among the Savages good quantitie of Gold and Silver, which is gotten out of the shippes that are lost upon the coast, as I have understood by the

Savages themselves. They use traffique thereof with one another” (Hakluyt 1904:452). The Calusa, known to the Spaniards as Carlos or Calos, probably had the greatest success in salvaging Spanish shipwrecks. Throughout the 16th century, the Calusa recovered immense quantities of goods directly from ships lost in the immediate vicinity and indirectly through the payment of tribute by native groups living on the central and south Florida Atlantic coasts and in the Florida Keys (Connor 1925:75; True 1945; Hakluyt 1965; Wheeler 2000).

When Menéndez arrived in the province of Carlos in 1566, he came across a considerable number of Spanish captives, who more than 20 years earlier had been in ships that wrecked on the Gulf Coast while sailing from Tierra Firme. The Calusa had killed many of the survivors and made prisoners of the remainder (Connor 1925:67). Menéndez later negotiated with Carlos in order to obtain the release of a great number of captive Spaniards who had survived from ships wrecking along the coast for a distance of 100 leagues (about 300 nautical miles) and also in the Florida Keys (Lowery 1959b:277). This was a personal matter for Menéndez, since some years earlier his only son had sailed from Mexico with a fleet of ships under his command and after a severe storm was wrecked near Cape Canaveral. Never having received news of what befell the survivors, Menéndez entertained hopes that his son was still alive (True 1945:33; de Carballido y Zúñiga 1951:101–102; Lyon 1990:30,44).

In 1564, René Laudonnière was told by two Spaniards held captive by Timucuan groups near the St. Johns River that they were among the survivors from three Spanish ships, homebound from Mexico, that had been lost 15 years earlier in the Florida Keys. Carlos had recovered most of the cargo and other material from the wrecks (de Carballido y Zúñiga 1951:51). According to the Spanish informants, Carlos “had a great store of golde and silver, so farre foorth that in a certaine village he had a pit full thereof, which was at the least as high as a man, and as large as a tunne” (Hakluyt 1965:50). It was said that salvaged treasure was so common in the province of Carlos that “all the men and women, in their dances, wore strips of gold and silver hanging from their necks and middles; some having so many they could not move” (de Carballido y Zúñiga 1951:51).

The Indians known as the Ays (or Ais), one of the native groups living on the central and south Florida Atlantic coast, were nearly as proficient as the Calusa in recovering large quantities of goods from wrecked

Spanish ships. The 16th-century Spanish shipwreck survivor Fontaneda wrote:

I desire to speak of the riches found by the Indians of Ais, which perhaps were as much as a million dollars, or over, in bars of silver, gold, and in articles of jewelry made by the hands of Mexican Indians, which the passengers were bringing with them. These things Carlos divided with the caciques of Ais, Jeaga, Guacata, Mayajuaco, and Mayaca, and he took what pleased him, or the best part. (True 1945:34)

When a Spanish ship wrecked on the coast, it triggered wild celebrations among the native groups living in the vicinity. Weapons, tools, hardware, gold, silver, jewelry, clothing, and a countless variety of exotic goods were all there for the taking, and, unlike armed overland expeditions, the Spaniards were almost always at the mercy of the natives. Vessels that ran ashore were picked over by Indian boarding parties, sometimes including entire villages. Ships that sank farther out were reached by canoes and salvaged by divers, while buoyant material floating in was picked up along the beach. The Indians killed or made prisoners of the survivors, whose personal belongings were taken from them and any bodies washing ashore (Dickinson 1945; True 1945; Solís de Merás 1964; Lyon 1980; Hann 1991:18–21).

Some of these celebrations probably were short lived. Indians in the New World had no immunity against Old World diseases, such as smallpox, chicken pox, measles, influenza, typhus, yellow fever, malaria, diphtheria, scarlet fever, and bubonic plague, which meant the ships bringing Florida natives material wealth also had the potential to deliver a deadly curse (Dobyns 1983). Spanish vessels were notorious for their overcrowded and filthy environments, lack of sanitary facilities, sewage-soaked holds, and hordes of rats, all of which created favorable conditions for the incubation and spread of disease (Parry 1969:74; Phillips 1986:156–157; Pérez-Mallaína 1998). When native groups interacted with infected crew and passengers, and handled contaminated food, cargo, and personal belongings there was the potential for widespread epidemiological catastrophe. As infected Indians carried germ-laden objects from one village to another, and as these goods were traded from one Indian group to another, disease was given an opportunity to spread rapidly (Crosby 1972; Dobyns 1983; Ramenofsky 1987).

While there is some disagreement among archaeologists and historians about the trajectory and effect of Old World diseases introduced to Florida and the Southeast in the 16th century (Crosby 1972; Dobyns 1983; Ramenofsky 1987; Ewen 2013; Hutchinson 2013; Mathers and Mitchem 2013), most studies have focused on Spanish *entradas* as the primary agents for the introduction of these diseases. An exception is Dobyns (1983:254), who observed that shipwrecked Spaniards were responsible for transmitting “some if not all” of these Old World pathogens. Hutchinson (2013:151) sums up the prevailing view when he writes: “As we develop new analytical approaches and methods of detection, we should likewise direct our efforts toward examining the contexts created by the Spanish *entradas* that facilitated diseases in Native populations.” Yet, rather than placing the greatest emphasis for the spread of European diseases on the few and infrequent Spanish *entradas*, it is suggested here that shipwrecked Spaniards, and contaminated objects from shipwrecks, undoubtedly had a far greater epidemiological impact on the Florida Indians over the course of the 16th century.

Rosaries, Paternosters, and Jewelry

To understand and better evaluate the comparative roles of shipwrecks vs. Spanish *entradas* as the primary means for introducing glass beads into 16th-century Florida, it is essential to look at the reasons glass beads would have been present on vessels sailing from the Americas to Spain. While it is well known that Spanish ships transported glass beads to the Americas as cargo, there has been less attention devoted to the presence of glass beads on ships sailing back to Spain. One reason for the lack of documentation is that glass beads were not returning to Spain as merchandise or cargo, but as integral parts of rosaries, paternosters, jewelry, and clothing belonging to passengers, officers, and crew (Steingraber 1957; Dubin 1987; Coles and Budwig 1990; Lightbrown 1992; Scarisbrick 1995; Deagan 2002).

Throughout the 16th century, Europeans of both sexes and nearly all social classes customarily wore a considerable variety of glass jewelry that included beads, chains, necklaces, dress jewels, and earrings (Steingraber 1957:83; Victoria and Albert Museum 1980). Forms of jewelry originating in the Italian Renaissance were combined with the traditional Spanish tastes favoring the rich use of color (Gregoriotti

1969:202). Jewelry was favored not only for its beauty, but also for what was believed to be its many “virtues,” including the power to protect, improve health, and increase mental power. Since color was a primary element in talismanic energy, glass was considered to have the same amulet-type qualities as precious gems. Glass beads were valued for their appearance, display of status, and talismanic power (Steingraber 1957; Gregoriotti 1969; Victoria and Albert Museum 1980; Villegas 1983; Lightbrown 1992).

Necklaces, chains, bracelets, and other articles of jewelry often combined glass beads with pearls, precious stones, semiprecious stones, and worked gold and silver (Steingraber 1957:83; Victoria and Albert Museum 1980; Scarisbrick 1995). Gallo (1967:plates 116–118) has illustrated the use of glass beads in necklaces and bracelets dating to the early 16th century in Peru. Figure 3 shows how one of these necklaces incorporates Nueva Cádiz and faceted chevron beads with beads and pendants of worked gold. Strings of glass beads and coral beads often were worn by wealthy women in Mexico (Benítez 1946:52), and a 16th-century necklace



Fig. 3 Early 16th-century necklace from Peru with Nueva Cádiz and faceted chevron beads (Gallo 1967:plate 118).

from Mexico illustrated by Ross (1952) shows how glass beads were combined with silver crosses.

Beads made from glass, rock crystal, coral, and gold were commonly used to create paternosters and rosaries. As a part of daily life, these were worn almost as personal jewelry by both men and women, and were essential objects of devotion and apparel (Dubin 1987:84,90; Lightbrown 1992; Scarisbrick 1995:42; Deagan 2002:66–68). A German chronicle dated to 1530–1540 noted that everyone “carried a paternoster or else was taken not to be a Christian. It was a badge of religion, and therefore of respectability” (Dubin 1987:90). Christie’s (1988:165) has illustrated a rosary of coral beads and gold beads (Fig. 4) recovered from the wreck site of the *Nuestra Señora de Atocha*, the famed Spanish galleon that sank on its way to Spain in 1622.

The manufacture of jewelry in the Americas began shortly after the earliest Spanish colonies were established, and it is likely that many of the considerable numbers of loose (or unstrung) glass beads imported from Spain were used in the production of jewelry and rosaries (Deagan 2002:109,132). These articles of jewelry and religious devotion produced in the New World

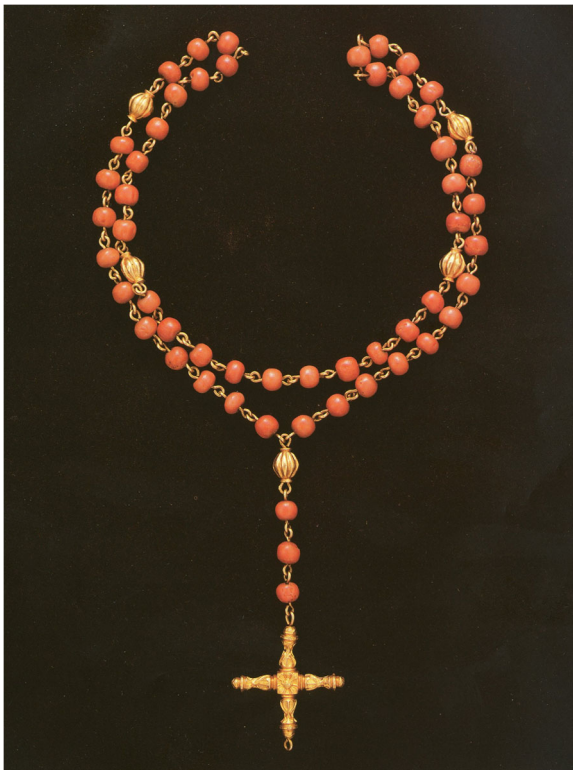


Fig. 4 Rosary recovered from the *Nuestra Señora de Atocha* wreck site. (Christie’s 1988:165).

were acquired by the Spaniards, possibly at times in a manner comparable to that of tourists, and taken back to Spain. This practice was described by Fontaneda, who, in referring to the immense quantities of treasure salvaged in the 16th century by the Ais Indians, wrote that these treasures included “articles of jewelry made by the hands of Mexican Indians, which the passengers were bringing with them” (True 1945:34).

Glass Beads from Spanish Shipwreck Sites

Since glass beads imported from the Old World were used in the New World to manufacture jewelry, paternosters, and rosaries commonly worn by Spaniards, it is not surprising that glass beads and other types of beads have been recovered from the wreck sites of homebound Spanish ships. While not many of these types of wrecks have been located and even fewer excavated archaeologically, several with loss dates ranging from the early 16th to mid-17th centuries have been investigated. One ship that wrecked off the southwest Florida coast near the Dry Tortugas is believed to have been a small merchant vessel lost in 1622 as it sailed from South America to Spain. The wreck site (at a depth of around 400 m) was excavated by Seahawk Deep Ocean Technology in 1990–1991 (Allender 1995).

Excavations yielded 282 beads and bead fragments made of glass, rock crystal, stone, wood, and ceramic. Figure 5 shows a collection of the glass and rock-crystal beads recovered from the wreck site. The glass beads and bead fragments included 7 faceted chevron beads; a drawn, translucent pale-blue bead with red and white stripes; and 45 seed beads (many faceted) of dark blue, turquoise blue, brown, red, garnet, cobalt, and black. The largest of the faceted chevron beads is five-layered; two of the smaller ones have seven layers. Also recovered were 40 Florida cut-crystal beads and 7 bead fragments (Allender 1995; Stemm and Kingsley 2013). One of the Florida cut-crystal beads is shown in Fig. 6.

To the east of the Dry Tortugas near the Florida Keys lies the wreck site of the *Santa Margarita*, which was a part of the ill-fated 1622 Tierra Firme fleet and sank as it was sailing from Havana to Spain. Corey Malcom (2000, pers. comm.) stated that the wreck site produced six Florida cut-crystal beads (Fig. 7). These apparently were used as buttons or decorative pendants, since a bronze wire ran through each of the beads and three of them retained a looped wire at one opening and a decorative cap at the other.

Fig. 5 Glass beads and Florida cut-crystal beads recovered from the Dry Tortugas wreck site. (Photo by Alan Bosel, 2016; courtesy Odyssey Marine Exploration, Inc.)



Glass beads have been recovered from the wreck sites of homeward-bound Spanish ships in the Bahamas. One of these, the *Nuestra Señora de Maravillas*, was lost near the Little Bahama Bank in 1656. Robert Marx (2000, pers. comm.) states that the *Maravillas* yielded a number of blue and green glass beads, and further notes that, based on his experience, glass beads are almost always found on the wreck sites of ships returning from the New World to Spain. North of the *Maravillas* site is

Grand Bahama Island, where in 1992 an early 16th-century Spanish shipwreck site was discovered. Among the artifact recoveries were three faceted chevron beads, one of which was 4.27 cm in diameter (Douglas Armstrong 2000, pers. comm.).

Once Spanish ships sailed from Havana and were safely past the Bahamas, they usually steered for Bermuda, where treacherous coral reefs became a final resting place for many vessels. Since these ships were

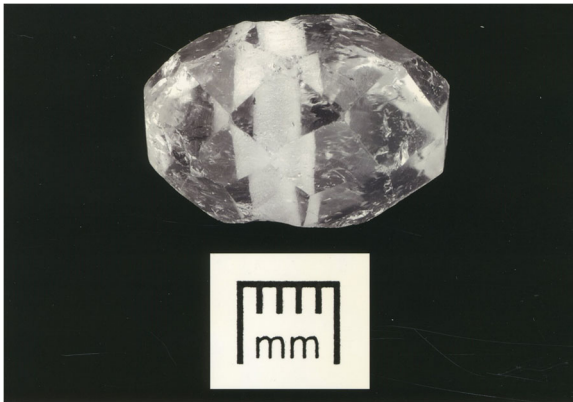


Fig. 6 Florida cut-crystal bead recovered from the Dry Tortugas wreck site. (Photo by author, 2016; courtesy Odyssey Marine Exploration, Inc.)

on a course for Spain, they were carrying the same objects and merchandise as those that sank on the Florida coasts. According to Teddy Tucker (2000, pers. comm.), in Bermuda, glass beads have been found on nearly every early period Spanish shipwreck, several of which date to the 16th century. The *San Pedro*, a Spanish vessel that sank off Bermuda in 1595, yielded numerous turquoise-blue, cylinder-shaped glass beads, together with gold, coral, and ivory beads. An unidentified Spanish or Portuguese ship that sank off Bermuda in the 1580s also produced many drawn, opaque (cylinder-shaped) turquoise-blue glass beads (Fig. 8), some of which the author has seen in private collections.

Nearly 800 glass beads were recovered from the wreck site of the *San Antonio*, a Spanish galleon that sank off Bermuda in 1621 (Teddy Tucker 2000, pers. comm.). At the Bermuda Maritime Museum, the author

Fig. 7 Florida cut-crystal beads recovered from the *Santa Margarita* wreck site. (Photo by Dylan Kibler, 2000; courtesy Mel Fisher Maritime Heritage Society, Key West, Florida.)



has examined a small sample of beads from the *San Antonio*. These include a large faceted chevron bead with 7 layers; 6 drawn, opaque turquoise-blue glass beads; 3 small, doughnut-shaped, amber glass beads; a faceted, amber glass bead; 5 large, spherical true-amber beads; 4 faceted steatite (soapstone) beads (Fig. 9); 5 spherical wooden beads; 4 spherical beads of bone or ivory; 9 tubular beads of red coral; 2 small Florida cut-crystal beads; 2 long, translucent, colorless glass beads; 3 small, barrel-shaped, colorless gooseberry beads; 8 olive-shaped, yellow glass beads; 2 spiral-fluted, barrel-shaped beads of green glass; and 24 spherical, opaque, blue glass beads.

In addition to homebound Spanish ships sailing from the Americas, glass beads have also been discovered on the wreck sites of the Spanish Armada ships *La Girona* and *La Trinidad Valencera*, lost off the Irish coast in 1588. Excavations of both sites yielded numerous artifacts, including glass beads and jewelry similar to the varieties found on Florida archaeological sites (Sténuit 1973; Glover 1990; Allender 1995). A faceted chevron bead (four layered and 28 mm in diameter) recovered from *La Trinidad Valencera* is shown in Fig. 10. These recoveries further illustrate Spaniards' use of glass beads as elements of jewelry.

Archaeological Sites and Spatial Distributions

One way to show more clearly the connection between Spanish shipwrecks and archaeological sites having 16th-century European components is to compare the spatial distribution of sites on the Florida Gulf Coast

Fig. 8 Drawn, opaque turquoise-blue glass beads from a ca. 1580s Spanish or Portuguese shipwreck site in Bermuda. (Photo by author, 2000; courtesy William Gillies.)



yielding glass beads with those producing precious metals. If established thinking is correct, that glass beads only came from Spanish *entradas* and precious metals possibly came from shipwrecks, then there ought to be a significant difference in the spatial distributions for each type of artifact. Figure 11 shows the spatial distribution of sites on the Florida Gulf Coast yielding glass beads, and Fig. 12 shows sites producing objects of gold and silver. Aside from the greater number of sites yielding glass beads, there is no significant difference in the distribution of sites yielding either category of artifact.

A second potential direction for investigating the connection between Spanish shipwrecks and land sites is to compare the types of artifacts produced by both kinds of sites. Expanding the sample of sites from the Florida Gulf Coast to include the entire state creates a more complete contextual picture. Both shipwreck sites and Florida terrestrial sites have produced beads made from glass, rock crystal, amber, coral, clay, stone, silver, and gold; silver bars, cups, bells, necklaces, and chains; objects of silver, gold, and rock crystal, including ornaments and pendants; iron nails, spikes, chisels, knives,

Fig. 9 Faceted steatite (soapstone) beads from the *San Antonio* wreck site. (Photo by author, 2016; courtesy Bermuda Maritime Museum.)

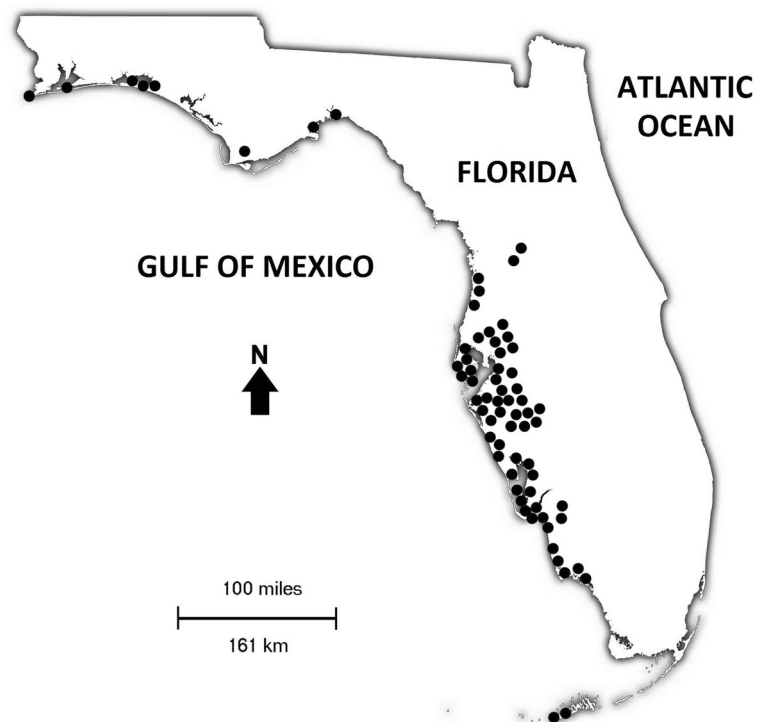




Fig. 10 Faceted chevron bead from *La Trinidad Valencera* wreck site. (Photo by Michael McKeown, 2000; courtesy Trustees of the Museums and Galleries of Northern Ireland.)

scissors, chainmail, and sword fragments; objects of brass and copper, including bells, buttons, and scales; gold, silver, and copper coins; lead weights; tortoise-shell combs; and Spanish olive-jar and majolica

Fig. 11 Spatial distribution of archaeological sites on the Florida Gulf Coast that have yielded glass beads. (Drawing by author, 2016.)



fragments (Allender 1995, 2016). This reveals the commonality of artifact varieties found at both shipwreck and terrestrial sites.

Another potential method for demonstrating the connection between Spanish shipwrecks and Native American archaeological sites is to compare the spatial distribution of land sites across Florida having 16th-century European components with coastal areas where Pedro Menéndez de Avilés said shipwrecks had occurred in the greatest numbers (Fig. 13). The comparison shows that most of these archaeological sites are in close proximity to areas where shipwrecks occurred most frequently, or, if the sites are inland, they are located between these same coastal areas.

Across the state, there are close to 80 Native American archaeological sites having 16th-century European components, and, with only a few possible exceptions, all are burial mounds (Allender 2016). While the European and European-derived artifacts found at these burial sites do not represent evidence for direct contact with Europeans, they may indicate the accumulation of prestige or elite goods for use in sacred contexts and strongly suggest that the Indians placed enough importance on the objects to include them in their burials. The sites having some of the most remarkable European artifacts

Fig. 12 Spatial distribution of archaeological sites on the Florida Gulf Coast that have yielded objects of silver and gold. (Drawing by author, 2016.)

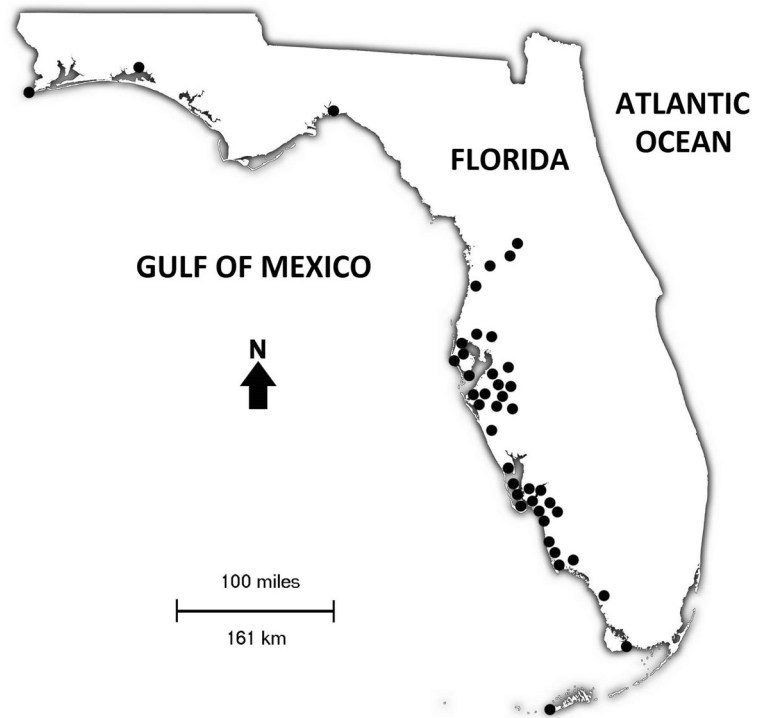
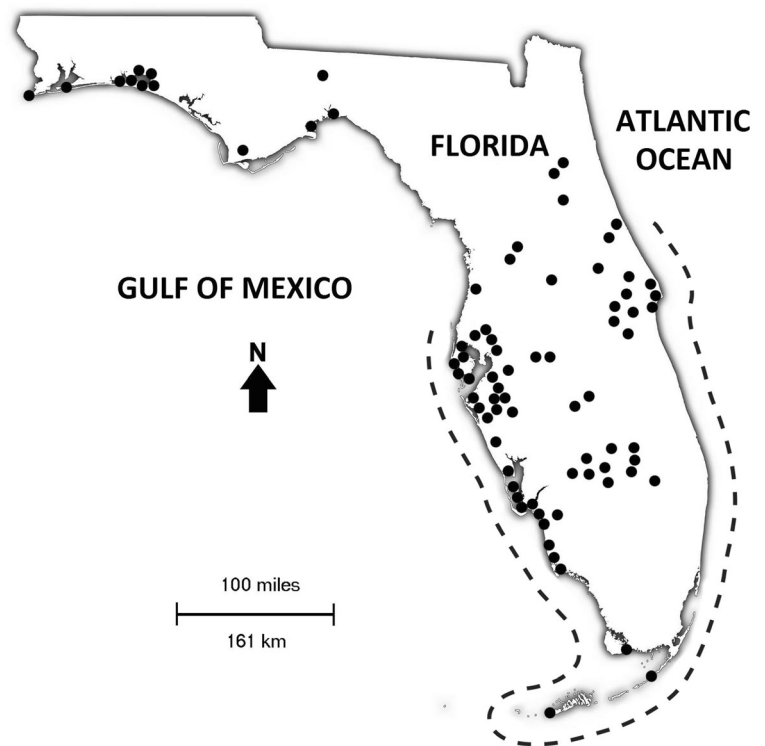


Fig. 13 Spatial distribution of Florida archaeological sites having 16th-century European components, together with coastal areas having the highest shipwreck frequency. (Drawing by author, 2016.)



are on the southwest Florida coast and near Lake Okeechobee, areas of Florida that were under the control or jurisdiction of the Calusa. The Calusa region was essentially the epicenter for Spanish shipwrecks and the receiving end for shipwreck materials obtained as tribute from across the state (Connor 1925; True 1945:34; Wheeler 2000; McMahon and Marquardt 2004). One of the more striking aspects of these burial sites is that glass beads and objects of gold and silver often are found together, with little differentiation and sometimes in nearly equal numbers (Allender 2016). An example of this on the Florida Gulf Coast is the previously discussed Weeki Wachee Mound (8HE12), which produced 127 glass beads and 151 silver beads.

While keeping in mind the inherent biases of archaeological site locations near major population centers, as well as the dispersal of objects through Indian trade and tributary networks, it is still instructive to observe that the spatial distribution of these sites is in close proximity to or within the boundaries of areas where Spanish authorities said shipwrecks were most common. In 1573, Diego Ruiz, on behalf of Pedro Menéndez de Avilés, gave the following sworn testimony: “This witness knows that all the Indians of that coast, from the river of Mosquitos [Ponce de Leon Inlet] as far as Tocobaga [Tampa Bay region], have a bad disposition. ... It is along that said coast that the vessels coming from the Indies are usually lost” (Connor 1925:61).

Conclusions

Among the ideas discussed in this analysis are four well-established and interrelated misconceptions. The first is that glass beads were exported from Spain to the New World for the primary purpose of trade with the Indians. Deagan (2002) has shown that this is incorrect. Many of the glass beads and other types of beads shipped loose and in large quantities from Spain arrived in the Americas ready for use in the manufacture of jewelry and religious articles, such as paternosters and rosaries. These industries sprang up soon after the Spanish conquests and employed both European and Native American artisans.

The second common misconception is that glass beads were not present, or at least not in any significant numbers, on Spanish ships heading from the New World to Spain. Again, this originates from the assumption that glass beads were only used for trade, and so there would

be little reason to have trade beads aboard Spanish ships heading in the opposite direction, away from Native Americans. This study has demonstrated, however, that considerable quantities of glass beads were aboard homebound Spanish ships both during and after the 16th century. These beads were incorporated into jewelry and rosaries that were worn by the Spaniards or kept among personal possessions aboard ship. Fontaneda (True 1945:34) observed that the Ais had obtained great quantities of Mexican jewelry from lost Spanish ships. If the Ais were recovering large quantities of Mexican (and South American) jewelry from wrecked Spanish ships, then it is logical to conclude that the Jeaga, Tequesta, Calusa, Tocobaga, Apalachee, and other native groups living on the Florida coast were doing the same.

Another widely held misconception is that Spanish ships rarely wrecked on the Florida Gulf Coast or at least not in any significant numbers. This belief is countered by authorities, such as Pedro Menéndez de Avilés, René Laudonnière, Richard Hakluyt, Diego Ruiz, and Hernando de Escalante Fontaneda, who plainly stated that the Florida Gulf Coast was a dangerous area and place of frequent shipwrecks (Connor 1925; True 1945; Hakluyt 1962). The close proximity of the Florida Gulf Coast to the sailing routes of ships homebound from Mexico, combined with the dangers posed by bad weather, contrary winds, unpredictable currents, poor navigation, and inexperienced crews, all created the conditions for numerous ship losses. Due to lost or incomplete records and imprecise reporting, undoubtedly the numbers and identities of nearly all of these lost ships will never be known.

The most dangerous area for Spanish shipping extended from Tampa Bay to the Florida Keys, though it is highly likely ships also were wrecking north of Tampa Bay and along the Florida Panhandle. While exploring the lower Gulf Coast, soldiers under the command of French explorer René Laudonnière reported seeing the masts of lost New Spain ships sticking out of the water (Hakluyt 1962:48). On the southwest Gulf Coast, the Calusa chief Carlos salvaged immense quantities of goods and killed or enslaved the survivors from multiple Spanish ships wrecked in the region, as did the Tocobaga chief at Tampa Bay. The Narváez expedition came across goods from an unidentified New Spain ship that wrecked at Tampa Bay (Bandelier 1922), suggesting that Narváez and his men were looking at cargo from a lost ship of Hernán Cortés.

Yet another common misconception, and possibly that most central to this study, is that glass beads found on Florida archaeological sites having 16th-century Native American and European components should be perceived strictly as items of trade. It follows that, if glass beads were always trade items, then they must have been traded to the Indians by Europeans, or, more specifically, Spanish explorers, such as Pánfilo de Narváez and Hernando de Soto. If glass beads only came from Spanish explorers, then their presence in archaeological sites can be used as markers for the paths the explorers took across Florida and the Southeast. This *entrada*-centric perception of 16th-century European contact in Florida has become so well established that, if, for example, a Nueva Cádiz bead or faceted chevron bead is discovered at an archaeological site, the first inclination is to associate the bead with one of these Spanish expeditions. It is argued here that the salvage of Spanish shipwrecks by the Florida Indians together with native trade and tributary networks offer a more logical and consistent explanation for the vast majority of glass beads and other European objects found on 16th-century Native American archaeological sites.

Acknowledgments: I wish to thank Corey Malcom for permitting me to use a photo of Florida cut-crystal beads recovered from the *Santa Margarita*, and William Gillies for allowing me to use a photo of glass beads in his collection. I appreciate Liz Shows for allowing me to use a photo of beads from the Dry Tortugas wreck site, and Jane Downing for her assistance with a photo of beads from the *San Antonio*. My thanks go out to Matthew Daley, who assisted me with a particularly difficult bit of computer graphics. I am very grateful to my wife for her editing of the final manuscript and for her support and encouragement throughout.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

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