Excerpted from:
Ricklis, Robert A.
1994 *Aboriginal Life and Culture on the Upper Texas Coast: Archaeology at the Mitchell Ridge Site, 41GV66, Galveston Island.* Coastal Archaeological Research, Inc., Corpus Christi.

CHAPTER 11

THE GRAVE GOODS: CHRONOLOGICAL, STYLISTIC AND FUNCTIONAL CONSIDERATIONS

In the aggregate, the data from the burials at Mitchell Ridge offer unusual opportunities to examine long-term patterns of continuity and change in important aspects of aboriginal life and culture. Since a majority (20, or 63%) of the 32 excavated grave pits have been radiocarbon dated, various attributes of the burials can be viewed within a fairly reliable chronological framework, providing insights into temporal trends/changes in mortuary ritual, inferable social patterns, and human ecology and demography. Additionally, the 51 individuals interred at Mitchell Ridge provide a relatively large sample with which to make spatial comparisons with burial data from other sites in the Galveston Bay area and the larger southeast Texas region, for the purpose of identifying certain basic geographic patterns in regional mortuary variability.

In this chapter, we examine grave goods as material culture. The grave goods merit separate consideration as artifacts for two important reasons. First, they comprise, for the most part, a segment of the archaeologically recoverable material assemblage quite different from that obtained through investigations of domestic living areas. Most of the artifact classes found in the burials at Mitchell Ridge are non-mundane in nature, being of either ornamental and/or symbolic significance; they provide, therefore, information on aspects of aboriginal culture not obtainable through excavation of habitation loci. Secondly, certain classes of artifacts serve as time markers, and help to fine-tune the dating of some of the burials. This is particularly true of the glass trade beads, which provide somewhat better resolution on the dating of Early Historic burials than do the radiocarbon dates, which, as noted in Chapter 8, tend to have wide calibrated ranges and several intercept points.

Major Artifact Classes Among the Grave Goods: Items of Native Manufacture

Marine and Freshwater Shell Artifacts

By Meredith L. Dreiss

A total of 296 marine and freshwater shell artifacts, recovered from mortuary and midden deposits at the Mitchell Ridge Site are described in this section. The majority of these, 284, were beads, ornaments or other ritualistic items found primarily in Late Prehistoric to Early Historic burial contexts. Gastropod species *Busycon (Sinistrofulgar) perversum pulleyi* (Lightning Whelk), *Oliva sayana* (Lettered Olive), *and Olivella) (Niteoliva) minuta* (Minute Dwarf Olive) represent 96% of the modified shell; while the remaining percentage, only 14 specimens, are made from *Crassostrea virginica* (Eastern Oyster), *Andara (Lunarca) ovalis* (Blood Ark), *Laevicardium (Dinocardium) robustum* (Giant Atlantic Cockle), *Mercenaria campechiensis* (Southern Quahog), and freshwater mussel (Table 11.1).

Table 11.1. Number of specimens of marine and freshwater shell artifacts, Mitchell Ridge

Taxa, items	
Busycon	
Whorl Fragments	2
Celt-Like (adze) tool	1
Columella segments	5
Columella beads	99

Oliva/Olivella	
Olivella beads	126
Oliva beads	29
Oliva tinklers	20
Marine/Estuarine Bivalve	
Unmodified clam	2
Perforated ark shell	2
Perforated Oyster Shell	3
Utilized oyster	1
Freshwater Mussel	
Modified bivalve	2
Pendants/pendant Fragments	4

The shell artifacts reported here were found with 10 of 32 burial features recovered from 41GV66 (Table 11.2). Columella beads, *Oliva* shell beads and tinklers and *Olivella* beads were either scattered among the skeletal remains within the burial pit or, more commonly, were found grouped as necklaces, bracelets, waist bands, and head bands. Many were found in situ around the neck, waist, wrist, or head of the skeletal remains. A few freshwater mussel pendants and bivalves, and several unmodified marine bivalves were also found as grave goods with the interments.

In non-burial proveniences in the block excavation and other occupational areas excavated in the 1970's, a small number of utilitarian shell artifacts were found. These include one *Busycon* celt (no provenience), one cut *Busycon* whorl fragment, three perforated oyster valves, five columella fragments (including one unprovenienced gouge-like columella segment), and one bead probably of *Mercenaria* bivalve. Except for the one unprovenienced bead found in the 1970's excavations, no shell beads, tinklers, or pendants were recovered in the occupational area; nor were utilitarian objects such as *Busycon* celts, gouges or perforated oyster shells found as grave offerings.

Table 11.2. Burial Features Associated with Shell Artifacts

FEATURE	TIME PERIOD	DESCRIPTION
Burial 10	Late Archaic	2 marine bivalves
Burial 7/8	Initial Late Prehistoric	1 *Busycon* whorl frag. 4 columella beads
Feature 86	Final Late Prehistoric	1 freshwater mussel 124 *Olivella* beads
Feature 30	Late Prehistoric/Protohist.	1 mussel frag.
Feature 82	Protohistoric	3 *Oliva* beads 39 columella beads
Feature 83	Protohistoric	2 *Olivella* beads 21 columella beads
Feature 61	Protohistoric	26 *Oliva* beads
Feature 63	Early Historic	17 columella beads 5 *Oliva* tinklers
Feature 64	Early Historic	Burial 1- 1 freshwater mussel 10 columella beads Burial 2- 2 columella beads Burial 3- 14 *Oliva* tinklers

		Burial 4- 1 *Oliva* tinkler 3 columella beads 2 freshwater mussel
Feature 65	Early Historic	1 perf. bivalve

Description of Marine and Freshwater Shell Artifacts

One hundred-seven shell artifacts (36% of the sample) were manufactured from the large left-handed gastropod *Busycon (Sinistrofulgar) perversum pulleyi*. Most of the these, 99 of 107, are beads found in Late Prehistoric through Early Historic burial features; they are cylindrical in shape, and are made from the axial pillar of the shell, the columella. These differ from discoidal beads made from portions of gastropod outer whorls which are prevalent, for example, in archaeological sites in south coastal Texas during the Late Prehistoric/Protohistoric Brownsville Complex (Anderson 1932; MacNeish 1958).

The other large class of marine shell artifacts (59%) are the beads and tinklers made from the commonly found *Oliva (Ispidula) sayana*, and *Olivella (Niteoliva) minuta* (Andrews 1977). Most of the smaller *Olivella* beads (124 of 126) come from a single necklace found with an adult male burial (Feature 86) with a Final Late Prehistoric date, while the 49 *Oliva* beads and tinklers are found in Protohistoric and Early Historic burial features.

Miscellaneous modified and unmodified marine bivalves total only eight specimens: two *Crassostrea virginica*, two *Anadara (Lunarca) ovalis*, one *Mercenaria campecheinsis*, and one *Laevicardium (Dinocardium) robustum*. Two modified freshwater mussel bivalves and four pendant fragments of mussel comprise the rest of the sample.

The following descriptive section is presented chronologically by burial feature. Included with the descriptions and dimensions for each shell artifact class are data entries on sex, age and associated grave goods. Taxonomic terms used to categorize the shell beads in this report are as follows: "cylindrical" columella bead defines any bead that is longer than it is wide; subdivisions of this includes "tube" beads which measure over 20 mm in length along the long axis and "barrel-shaped" with slightly tapered ends. "Disk-like" defines any columella bead that has a wider diameter than length. There is an overlap in length/width ratios on a few of the strings of columella beads at Mitchell Ridge. Except for a slight difference in length which puts them into a different category, some of the "disk-like" and "cylindrical" bead types are otherwise similar and do not represent a different bead type.

Late Archaic/Early Ceramic Period

Burial 10 (45 B.C.-A.D. 310)

Sex and Age: Adult male, 20-25 years

Grave Goods: 2 unworked marine clams, socketed deer metapodial point, Godley dart point.

Marine Bivalve Artifacts: Specimens #2113 and #2114 are 2 whole marine bivalves found with Burial 10. There is little evidence of modification except for slight smoothing along one lateral edge on each bivalve. Number 2113 is a *Laevicardium (Dinocardium) robustum*, and #2114 is a *Mercenaria campecheinsis*.

Initial Late Prehistoric

Burial 7 (A.D. 996-1205)

Sex and Age: Adult Male, 35-50 years of age.

Grave Goods: 1 *Busycon* whorl fragment, 4 columella beads, 2 lithics.

Busycon Shell Artifacts: #2122 is a *Busycon* whorl fragment with rough edges; possibly a worked pendant or adze blank. Dimensions: 127 mm long, 69 mm wide. #2117, 2118, 2119, 2120 are 4 heavy, columella tube beads with pronounced spiral grooves. The surfaces are not as smooth as some of the later columella beads. The ends are cut straight and ground smooth. Bore holes are biconically drilled with a narrowing towards the center (Figure 11.1a).

Dimensions: 42-36 mm long, 14-17 mm wide; bore hole diameter is 6.5 to 7.0 mm.

Final Late Prehistoric

Block Excavation (A.D. 1279-1484)

Busycon shell Artifacts: #359 (N0E0, level 4, 15-20 cm) is a *Busycon* whorl fragment with shoulder somewhat intact. Both lateral edges have been cut; one side is ground smooth, the other edge is somewhat rough. There are several perforations in the body of the whorl and shoulder; most appear natural, but one, the largest, could have been drilled from the dorsal surface.

Numbers 365 (N6E0, zone 2, level 1), 419 (N6E6, zone 2, level 2), 391-C (N6E2, zone 2, level 2), and 501 (Feature 101) are 4 thin columella segments with no perforations or grooves. A few are somewhat bipointed.

Dimensions: 110 mm long, 96 mm wide, 21 mm at anterior canal for the whorl fragment; and 52-28 mm long, 13-9 mm wide for the columella segments.

Marine Bivalve Artifacts: One Utilized and 3 perforated oyster bivalves of *Crassostrea virginica*, were found in the Block Excavation. The utilized bivalve, #360, has one distinctly worn edge. One of the perforated oysters, #372, is a right valve with a large biconically drilled perforation near the umbo. Natural weathering has worn down the top layer, exposing a pearly layer. Numbers 370 and 483 are similar but not as worn; the perforations are smaller. One oyster valve, which is not an artifact, was found with a pearl embedded on the inside, concave surface.

Dimensions: #360: 100.5 long, 69 mm wide; #372: 100 mm long, 65 mm wide, perforation diameter is 24 mm; #370: 140 mm long, 84 mm wide, perforation diameter is 5 mm; #483: 100.7 mm long, 65 mm wide, perforation diameter is 8 mm.

Feature 86 (A.D. 1280-1480)

Sex and Age: Adult Male

Grave Goods: 2 engraved bird bone whistles, 1 *Olivella* shell necklace, 1 polished freshwater mussel shell, 14 chert blades/flakes, 1 chert bifacial knife, 1 bird bone bead.

Olivella Shell Artifacts: 124 *Olivella minuta* shell beads comprised a necklace found around the neck of this adult male burial. These are small, very fragile shells with spires removed, probably by grinding. There are no other signs of modification to the shell, although many are fragmented with naturally occurring holes in the whorl body (Figure 11.3).

Dimensions: 11-15 mm long, 4-6 mm wide.

Freshwater Mussel Artifacts: One extremely large freshwater bivalve was found placed over the heart

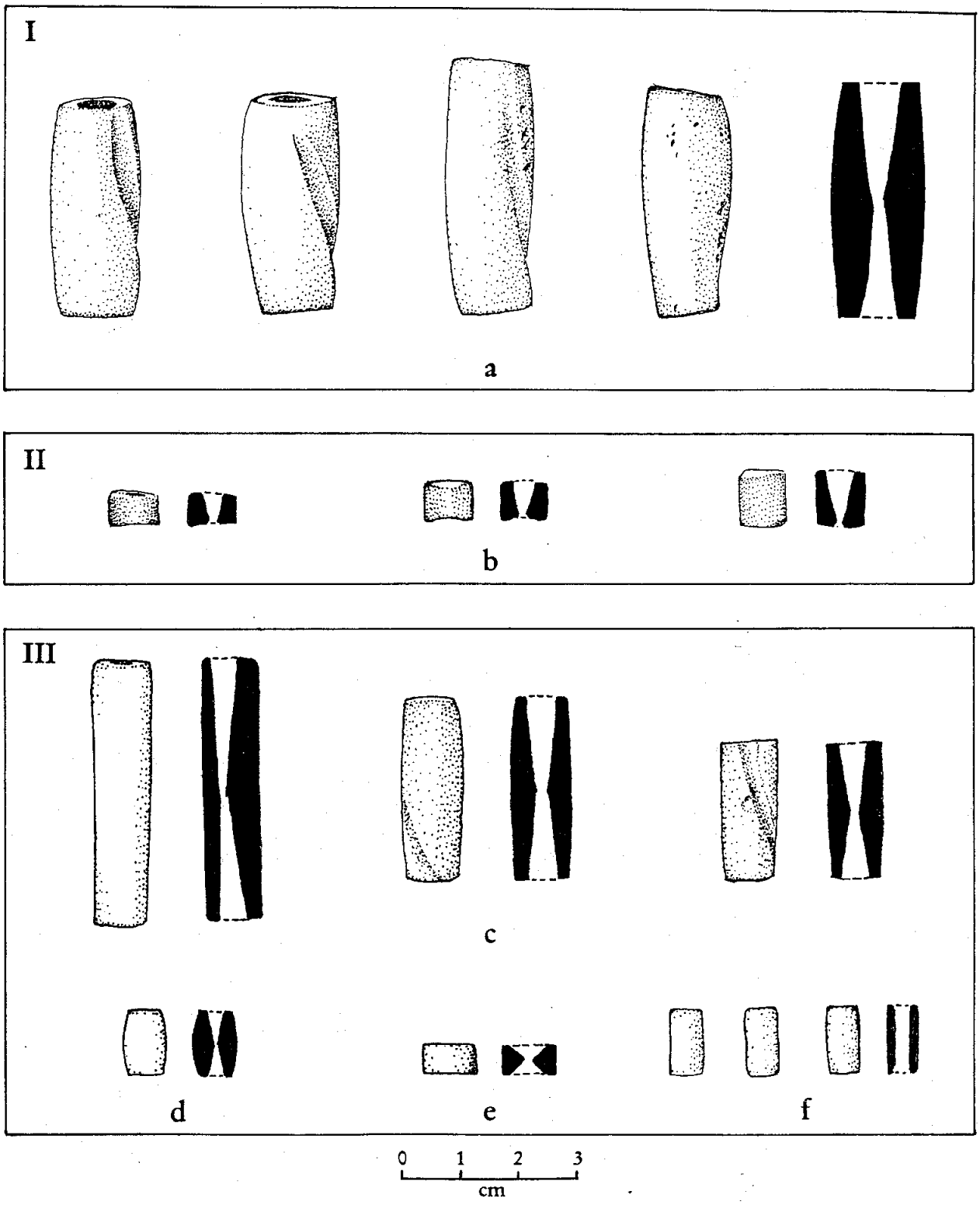

Figure 11.1. Varieties of conch columella beads in Mitchell Ridge burials.

area of the adult male burial. The top layer of the valve was removed, or polished down to reveal a pearly finish. Other distinguishing marks include two small perforations, one is possibly man-made, drilled from the concave surface; and also the ventral margin of the shell has an abraded edge (see Figure 8.23).

Dimensions: 134 mm long, 77 mm wide.

Late Prehistoric/Protohistoric

Burial Feature 30 (A.D. 1432-1657)

Sex and Age: Adult male, 20-35 years.

Grave Goods: One freshwater mussel shell fragment.

Freshwater Mussel Artifacts: The one mussel shell fragment is too fragmented to tell whether it was originally a pendant.

Dimensions: 33 mm long, 9 mm wide.

Protohistoric

Feature 82 (A.D. 1446-1965)

Sex and Age: Juvenile, incomplete

Grave Goods: 41 columella beads, 3 *Oliva* beads,1 chert drill, 1 engraved bird bone whistle, 2 glass beads, red ochre.

Busycon Shell Artifacts: Lots #289, 291 and 292 represent a scatter of 41 columella beads. The columella segments are cylindrical in shape but are somewhat squared (a few are wider than they are long) with the cuts on either end a bit rough and uneven (Figure 11.1b). Many have a reddish stain, probably caused by contact with red ochre placed in the grave. All have beveled bore holes drilled from one end, narrowing to a smaller non-beveled opening on the opposite side. Some have patches of what looks like a resinous coating adhering to their surface.

Dimensions: 8-9 mm diameter, 5-10 mm long, bore hole diameter is 4-5 mm for larger hole and 1.5-2 mm for smaller hole.

Oliva Shell Artifacts: 3 *Oliva* beads, one from Lot #289 and two from Lot #291, were found amongst the scatter of columella beads with the disarticulated adolescent. The spires have been cut off just above the shoulder and the cut areas have not been ground smooth. Traces of red ochre are found on the bead surfaces.

Dimensions: 23-30 mm long, 10-13 mm wide.

Feature 83 (A.D. 1409-1641)

Sex and Age: Child, 5 years

Grave Goods: One glass and shell bead necklace composed of 15 glass beads, 2 *Olivella* beads and 21 conch columella beads; 2 Black Drum teeth; red ochre, yellow/orange ochre.

Busycon Shell Artifacts: The 21 *Busycon* columella beads, part of a glass and shell bead necklace, were found near the neck of the interred child. The red ochre-stained columella beads are similar in shape to

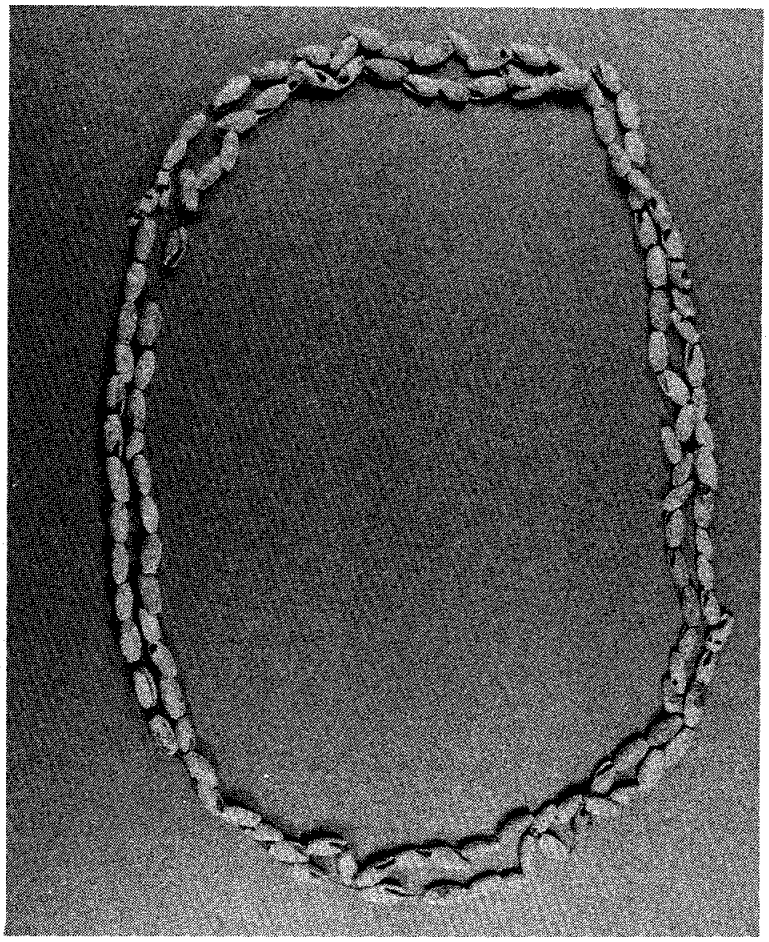

Figure 11.2. Photograph of *Olivella* shell bead necklace associated with adult male burial, Feature 86.

those from Feature 82; cylindrical, chunky with uneven ends, and bored from one direction, with a narrowing towards one end. Some have patches of resinous substance adhering to their surface.

Dimensions: 6.5-8 mm in diameter, 7-15 mm long, bore hole diameter is 5 mm for larger hole and 2-2.5 for smaller hole.

Olivella Shell Artifacts: 2 fragile *Olivella minuta* shells were found with the glass and shell bead necklace. One has the spire cut off, the other is too fragmented to tell but probably it was strung in a similar fashion. They are reddish-orange in color, probably stained by the red and yellow/orange ochre placed in the child grave.

Dimensions: 12 mm long, 5 mm wide.

Burial Feature 61 (A.D. 1443-1954)

Sex and Age: Adult female.

Grave Goods: 26 Olive shell beads around head.

Oliva Shell Artifacts: The 26 *Oliva* shell beads (#192-1 through 26) found as a head band encircling the skull of this adult female have had their spires removed. The cut area, just above the shoulder, has not been ground smooth. No other modifications to the shell is noticeable except for the fact that on many of the beads the outer lip of the whorl appears worn, and there are numerous nicks and abraded areas along the long axis of the body whorl. Curiously, red ochre discoloration can be seen only in the abraded areas of the bead surfaces. Patches of resinous substance can be seen on the shell surface of some of the olive shell beads. On one bead, the spire is cut below the shoulder creating a larger hole at the apex.

Dimensions: 28-42 mm long, 12-17 mm wide (this measurement includes the outer lip at its widest).

Early Historic

Feature 63 (A.D. 1490-1955)

Sex and Age: Adult male and infant bundle, with cremation of adult male within bundle.

Grave Goods: A necklace composed of 68 glass beads and 12 columella beads, and 1 prismatic blade were found with the adult male. One bird bone whistle, 5 *Oliva* tinklers, 5 columella tube beads and 977 glass beads were associated with the infant bundle and cremation. The grave pit was surrounded by squared post molds.

Busycon Shell Artifacts: The glass and shell bead necklace was found near the skull of the adult male interment. Of the 12 columella beads on the necklace, seven are cylindrical and five are discoidal. The cylindrical beads, typically longer than they are wide (see Hammett and Sizemore 1986 for a discussion of "cylindrical" beads), have been ground smooth along their long axis and are fairly symmetrical. One of the beads is distinctly barrel-shaped. The bore holes are relatively large, narrowing only slightly towards the middle. The 5 disk-like columella beads are wider than they are long with flat ground ends and smooth surface. Beveled bore holes are biconically drilled, relatively large compared to wall thickness, and straight across. Patches of resinous substance can be seen on the shell surface.

Numbers 535-B, 535-E, 197, 201, and 292 are five relatively long columella tube beads found with the infant bundle and cremation. They show a degree of grinding at either end and along the long axis with three having parts of the spiral groove still intact. The bore holes are biconically drilled with a narrowing towards the center. Patches of a resinous coating is also seen on these specimens.

Dimensions: cylindrical beads: 10-14 mm long, 6-7.5 mm wide, bore diameter is 3-4 mm; disk-like columella beads: 9 mm diameter, 5 mm long, bore diameter is 3 mm; columella tube beads: 24-45 mm long, 9-11 mm wide, bore diameter is 5 mm.

Oliva Shell Artifacts: These 5 *Oliva sayana* tinklers (#535-A, 535-C, 535-D, 199, 200) were found with the infant bundle and adult male cremation. They have been cut transversely below the shoulder. The cut area has been ground smooth. They each have a sawed groove with a drilled perforation near the anterior canal on the dorsal surface. These Olive shells are clearly larger in size than the ones used for beads in Feature 61. Since portions of the apex and body are removed, width dimensions may be a better indication of overall size than length.

Dimensions: 32-38 mm long, 16-20 mm wide.

Feature 64 (A.D. 1663/1644-1955)

Sex and Age: 4 superimposed burials: Burial 1 is an adolescent female; Burial #2 is a juvenile, approximately 5 years; Burial #3 is a juvenile, approximately 3 years; Burial #4 is an adult male.

Grave Goods: Burial 1: 2 bird bone whistles, 20 pebbles in cluster (rattle?), 1 conch shell bracelet, 1 modified freshwater mussel, 1,374 glass beads. Burial #2: 2 columella tube beads, 1 brass flange loop bell, 40 glass beads; Burial #3: I *Oliva* shell tinkler waist band, 57 glass beads; Burial #4: 3 columella tube beads, 1 *Oliva* hair ornament, 2 freshwater mussel shell ornaments, 4 bird bone whistles, pebbles in cluster, 1 prismatic blade, 505 glass beads, post molds.

Busycon Shell Artifacts:
Burial 1: The 10 columella tube beads #222-231 are from the wrist area of the interment. They have ground flat ends and have been ground along the long axis. Most of these beads still retain some segment of the spiral groove, but a few are ground smooth. Many have a reddish ochre stain and a few show patches of a thin yellowish resinous substance. The bore holes are biconically drilled with a narrowing towards the center (Figure 11.1, IIIc).

Dimensions: 19-33 mm long, 9-10 mm wide, bore diameter is 4.5-5 mm.

Burial #2: The 2 columella tube beads, #242 and 242 are similar to those from Burial #1. They are ground at the ends and along the long axis, the smaller is slightly barrel-shaped, the other has a hint of the spiral groove showing. Slight patches of ochre are barely visible on the shell surface. Bore holes are biconically drilled with a narrowing towards the center.

Dimensions: 42 and 23 mm long, 9 and 10 mm wide, bore hole diameter is 5 mm.

Burial #4: Three cylindrical wampum-like beads were found near the skull of this adult male burial. The beads are thin walled, delicate, completely ground smooth, and may have been lathe-turned. They have a straight bore (Figure 11.1, IIf).

Dimensions: 11-12 mm long, 6 mm wide, bore hole diameter is 3.5
mm.

Oliva shell Artifacts:

Burial #3: 14 *Oliva sayana* tinklers (#249-262) were found around the waist area of Burial #3, a three year old child. Thirteen of the 14 artifacts have had their spires removed by a transverse cut below the shoulder and they each have a sawed groove with a drilled perforation near the anterior canal. Traces of resinous substance can be seen on five of these tinklers. Generally, most of these specimens show less grinding and are rougher along the cut edge than those from Feature 63. One exception, #251, is a bead with the spire cut off above the shoulder and with no sawed groove or perforation in the body whorl. The cut at the apex is not ground smooth, resembling more closely the *Oliva sayana* beads from Feature 61.

Dimensions: 13 tinklers: 29-33 mm long, 14-17 mm wide; 1 Olive shell bead: 34 mm long, 15 mm wide.

Burial #4: One very large *Oliva sayana* tinkler, or possible hair ornament, was found near the top of the cranium of Burial #4, an adult male. The spire has been cut off below the shoulder with the cut edge ground smooth. This is the only piece with any decoration. A design of small tick marks underlined by a horizontal line, and then a row of punctations can be seen just below the cut edge. Also a large sawed groove with a drilled perforation is notable near the anterior canal.

Dimensions: 42 mm long, 23 mm wide.

Freshwater Mussel Artifacts:

Burial #1: One mussel shell valve was found with Burial #1, an adolescent female. Portions of the top layer of the outer surface are worn down, or purposely removed, revealing a pearly sheen. The ventral margin is chipped, and a small perforation can be found near the umbo; the perforation, however, may result from natural processes.

Dimensions: 79 mm long, 52 mm wide.

Burial #4: Two triangular mussel shell pendants (#272 and 273) were found with Burial #4, an adult male. They are both pearly, very thin, less than 1 mm in thickness, with ground smooth edges. Number 272 has a small perforation drilled through one apex, while the other two apexes show signs of the beginnings of perforations but are not drilled all the way through. It looks like #273 had the same perforation pattern but this piece is broken at each of the perforation points.

Dimensions: each side of the triangle is approximately 18-21 mm.

Feature 65/65-A (A.D. 1694-1955)

Sex and Age: Adult male and secondary cremation.

Grave Goods: F. 65: 1 iron spike fragment near head, 1 perforated ark shell, 3 antler points, 1 antler billet, 2 iron tool fragments, 3 iron nails, 2 chert drills; F.65-A: 3 chert drills, 1 perforated ark shell, 1 iron spike fragment, 1 engraved bone pin, 1 bone "dagger", 1 antler billet, 1 glass mirror frag., 34 glass "seed" beads.

Marine Bivalve Artifacts: Number 307 is an ark shell, probably the *Anadara (Lunarca) ovalis,* found near the right elbow of Feature 65, an adult male. Some abrasion is noticeable around the edge of a large hole at the apex of the umbo. The hole could have occurred naturally which is quite common, but then later suspended as an ornament. Number 324 is a much smaller perforated ark, possibly slightly burned. Dimensions: #307: 32 mm long, 36 mm wide; #324: 17 mm long, 21 mm wide.

Busycon Shell Artifacts

Six burial features at Mitchell Ridge contained *Busycon* columella beads. All were adult males, juveniles, or small children No adult females were found buried with columella beads, but since few burials of adult females are from the Protohistoric and Early Historic periods at the site it is difficult to tell whether the status of females was such that they were not buried with the same ritual accorded to males and children, or if they were simply buried elsewhere. Because of the high percentage of female burials at the nearby Caplen Site on Bolivar Peninsula, Campbell (1957) raises a similar question about the lack of adult male burials at that site, suggesting they may have died elsewhere. A low ratio of female burials with personal adornments is also reported by Aten et al. (1976) for the Harris County Boy's School Cemetery.

The motive for ritual placement of marine shell and other grave goods within a grave may vary somewhat geographically, but it is a complex issue related to how a particular group may wish to convey ranking, territorial, spiritual, social and/or economic information within and outside of the community. It is not clear whether the strings of *Busycon* shell necklaces and bracelets found with burials at Mitchell Ridge were simply possessions buried with their owners at the time of interment (see Winters 1968), or if more ritual significance was accorded certain individuals. It is certainly possible that a form of ranking or wealth identification is associated with marine shell beads in burials at the site; as mentioned earlier a bias is noted for adult males and children. Ethnographic data for the upper Texas coast documents several levels of statuses; among them headman, war chief, shaman, skilled craftsman, flint knappers, weavers, shell bead manufacturers, slaves, etc. (Aten 1984), so it is possible that differential mortuary practices signaled these distinctions. Elsewhere, for example, in California among the Chumash it has been suggested that the occurrence of beads in graves within certain areas of the cemetery signaled a form of ranking (King 1969). It may be that such a restricted usage accurate at Mitchell Ridge, where the Area 4 burial group yielded almost all of the marine shell artifacts and other grave goods found at the site (see

discussion in Chapter 12).

The inclusion of marine shell with infant and children burials either signaled ascribed rather than achieved status, or symbolized something hopeful that would ease the pain of the bereaved family. It has been suggested by some researchers that the reverence for marine shell, especially spiral shell shapes, is a phenomenon tied to magic, and ceremonialism. As a symbol for water, creation, fertility, death and rebirth the use of shell in ritual and myth is a fairly universal occurrence (Taxay 1970). According to a Seneca myth, for example, the early inhabitants of New York believed the placement of shell with the dead helped permit entry into the spirit world (Ceci 1986).

The placement of marine shell artifacts in graves of juveniles or young children is a fairly common mortuary practice in North America from Texas to California to Newfoundland (Taylor 1994; Hall 1994; King 1969; Bennyhoff and Hughes 1987; Yerkes 1986; Sempowski 1986; Fiedel 1986; Walthall 1980), and elsewhere worldwide (e.g. see references to child burials with marine shells at Tikal in Mesoamerica (Moholy-Nagy 1986) and by the San of the Kalahari (Fiedel 1986). In Texas, incidences of children and infants buried with marine shell grave items has been documented from the Archaic Period onward.

Busycon Columella Bead Chronology

A distinct chronological difference in columella bead form, degree of grinding, and changes in bore hole technology can be seen at the Mitchell Ridge site. The earliest columella beads at the site, from Initial Late Prehistoric deposits, are heavy, thick walled, with deep spiraling columella grooves indicating a lack of grinding along the long axis. The bore holes are biconically drilled with a narrowing of the bore channel towards the middle. Essentially these beads correspond to Late Archaic forms shown in the bead chronology chart compiled for sites in western New York (Ceci 1986: Figure 2). Bead type similarities with other regions of eastern North America may indicate a widespread occurrence of changing bead shape and concomitant technology that reached far beyond the Gulf Coastal area of Texas. The tendency for columella beads to become varied and more narrow with thin walls, ground surfaces, and straight bores as charted by Ceci is reflected in the Mitchell Ridge chronology.

By the Protohistoric Period columella beads at the site are more narrow, short and discoidal-like. They exhibit a fair degree of grinding on their surface. In this period all of the columella beads from Feature 82 and 83 have bore holes drilled from one direction, creating a funnel-like bore channel towards a smaller non-beveled hole on the opposite end. Only in this time period are the holes drilled in this manner; perhaps biconical boring was unnecessary on short disc-like columella beads (some are wider than they are long).

There are several cylindrical shapes of columella beads from Early Historic deposits. Most of them, especially the long columella tube beads (defined as being over 20 mm long by Ceci [1986]) show more refined grinding on the ends and along the long axis. There is one distinctly barrel shaped cylindrical bead (Feature 63) that is similar in form to ones seen in the A.E. Anderson Collection (Anderson 1932), the Huasteca area (MacNeish 1958), at the Harris County Boys School Site (Aten et al. 1976); and also described by Hammett and Sizemore (1986) for the Carolinas, and elsewhere. The three wampum-like beads found with the elaborate Burial #4, Feature 64 are the only ones that could have been lathe-turned. They are small polished, cylindrical columella beads with straight bores and no spiral grooves. The reader is referred to Ceci (1986), and Sempowski (1986) for a discussion of lathe-turned wampum, a technique introduced by the Dutch after the late 17th Century.

Non-Bead Busycon Artifacts

A brief comment here on the four *Busycon* columella fragments found in the block excavation points to the fact most researchers are not in agreement as to what they were or how they were formed. These thin, bipointed columella segments, referred to as "awls" or "pins" by a number of archaeologists (Holmes 1883, Prewitt et al. 1987, Janota 1980; and others), could have been formed by rolling wave action on a sloping beach. This notion originated with Campbell (1947), and Bullen (1974) has come to the same conclusion for similar items with no grinding marks that have been found in Florida. In Ceci's (1986: Figure 4) article on tracing wampum's origins in the northeast she shows a photo of numerous bipointed columella fragments she calls "bead blanks". They closely resemble the ones found at Mitchell Ridge and at other central coast sites in Texas (Prewitt et al. 1987; Steele 1988; Campbell 1947). Few, if any,

references in Texas refer to these items as "bead blanks".

One unprovenienced columella specimen, with portions of the whorl intact but with no spire, has a chisel-like beveled tip at the anterior end on the dorsal side. Similar items are discussed by Prewitt et al. (1987) for the Swan Lake Site in Aransas County, Texas. *Busycon* gouges are reported from Kent-Crane (Campbell 1952) and other coastal sites in south Texas where utilitarian tools were made from conch shell.

The one *Busycon* celt-like artifact at the site (no provenience) is similar in form to utilitarian shell tools found further south at occupational sites in coastal south Texas. It has a beveled edge and is made from a *Busycon* body whorl. Celt and adze forms made from conch whorl, probably used for woodworking or as digging implements, are found throughout the Caribbean littoral. Manufacturing techniques for these items are discussed by Eaton (1974) in his report on *Strombus* celts found in the Yucatan.

One fairly large *Busycon* whorl fragment from the block excavation has a cut and smooth edge. It may have been used as an implement or discarded after the columella was cut away. Another possibly worked whorl fragment (pendant or adze blank) was found associated with Burial #7. Although there is little evidence of shell artifact and bead manufacturing refuse at the site, the inclusion of chert drills in Burial Features 65, 82 and 87 may indicate some on-site manufacturing activity by certain individuals.

Columella Bead Technology

After detaching the whorl from the columella (usually via breaking, percussion, cutting, or snap and groove techniques), desired lengths of cylindrical beads were cut or sawn using some type of abrading tool. The use of flint flakes or thin flake side scrapers for this purpose has been suggested by MacNeish (1958) for the Tamaulipas region in northern Mexico, while Janota (1980) mentions the use of chisel-like gravers and sandstone as abraders for the central coast of Texas (for abrading and cutting methods see also Campbell, 1952, Mokry 1980, Hall 1981). Columella beads were abraded to a point where the segment was easily snapped off, and then the piece was shaped, drilled, ground smoothed, and sometimes polished (Janota 1980, Hall 1981, Francis 1986). The drilling process commonly involved the use of hafted chert drills to bore either end of the cylindrical bead (Campbell 1957, Janota 1980, Hall 1981). As discussed previously, the direction of boring, configuration of channel, and bore hole diameter changed over time due to varying sizes of drill bits and length and width of columella segments.

After reviewing items in the A.E. Anderson collection and assessing shell technology for the localized industry in the Rio Grande Delta, Salinas (1981) and other researchers have concluded that the presence of small hammerstones, sandstone-cutters, used flakes and bifaces, and stone and bone drills suggests that a variety of implements were used to process the shell. Likewise, during the Mississippian Period (A.D. 1000-1400) in the American Bottom region of the Mississippi River Valley, a tool kit consisting of microdrills, perforators, gravers, sandstone saws, and sandstone slot abraders for cutting and smoothing shell beads and pendants was used by householders living in Cahokia and other nearby sites (Trubitt 1993; Yerkes, 1983). Reportedly, most of the raw material used in this inland region was *Busycon* imported from the Gulf of Mexico (Kerber 1986, Trubitt 1993).

The best documentation for shell manufacturing locales in Texas is in coastal areas where an abundance of *Busycon* occurs. At the mainly Late Archaic Kent-Crane and Johnson Sites almost all of the shell items produced were utilitarian in nature (adzes, gouges, hammers, awls and scrapers) (Campbell 1947, 1952, 1958b), while the shell industry in the Rio Grande Delta region (Late Prehistoric-Brownsville Complex) is known for its production of tools and ornaments (beads, pendants, gorgets, and other marine and mussel shell items) (MacNeish 1958; Hester 1969a). On a smaller scale, localized shell artifact manufacturing may have taken place if, for example, whole *Busycon* were imported into a site for the purpose of shell work. However, one would expect to find evidence of spent whelk shells with obvious signs of reduction modification to the whorl and/or columella. This is the case at a few sites (e.g. see Dreiss [1994] for the Loma Sandia Site; Story [1968] for the Ingleside Cove Site; and also Campbell [1957] for itemization of a bead manufacturing tool kit found in a female grave at the Caplen Site).

Notes on Busycon Taxonomy and Range

A particularly vexing problem for archaeologists, and one that has not been easily solved in the past, is the debate on taxonomic differences between the species of sinistrally whorled *Busycon* that

inhabit the inlets, bays, and open waters of the eastern seaboard and the Gulf of Mexico. Pendergast (1986) has researched the topic and reports that members of the Committee on Scientific and Vernacular Names of Mollusks (Turgeon et al. 1986), the Council of Systematic Malacologists, and the American Malacological Union have agreed upon three species of American left-handed *Busycon*. One, a relatively small species, *Busycon Laeostomum*, ranges from southern New Jersey to northern Virginia. Its right-handed counterpart, *Busycon carica*, is frequently found in coastal middens of South Carolina, Georgia and Florida. Tools found on the Atlantic coast are also from this dextral form (Larson 1980).

Busycon sinistrum measures 10-40 cm in length with relatively thin walls, triangular knobs at the shoulder, and an elongated body whorl. The shell does not have a swollen ridge across the siphonal canal. It ranges from southern New Jersey to the Gulf States. East of the Mississippi River it blends with *Busycon (Sinistrofulgar) perversum pulleyi*. *Busycon contrarium*, often confused in the archaeological literature with *Busycon sinistrum*, is the name for an extinct Miocene species with rounded shoulders (no spines). This spineless population ranged from North Carolina to Texas (Puffer and Emerson 1954; Pulley 1972) and would only be recoverable today as fossilized shell from spoil banks. Hollister (1958) has made it clear in his discourse that *Busycon contrarium* is not the same form as the tuberculated or spinose shell of Recent fauna.

Along the Texas coast there is generally recognized only one species of sinistrally whorled whelk, *Busycon (Sinistrofulgar) perversum pulleyi*. Curiously, Andrews' (1977) photograph for *Busycon perversum pulleyi* along the Texas coast shows the elongated form without a swollen ridge which is illustrated and described in Pendergast (1986, Figure 1) as *Busycon sinistrum*. This could be a bit confusing except for the fact that intergrades exist at both the northern and southern limits of its range. *Busycon (Sinistrofulgar) perversum pulleyi* blends with both the more slender *Busycon sinistrum* at about the Mississippi Delta region, near Breton, Sound Louisiana, and also with the heavy, shorter form with a swollen ridge on the siphonal canal (formerly referred to as *Busycon perversum* Linne 1758) in northeast Mexico.

T.E. Pulley (1972) discusses the importance of establishing the presence or absence of intergrades between adjacent populations in order to differentiate molluscan species. His comments, presented here, on the two slightly different forms of *Busycon (Sinistrofulgar) perversum pulleyi* found along the Texas and northern Mexican coasts, may clear up some confusion as to its nomenclature and occurrence:

> In the case of the left-handed whelk, there are sufficient collections available today to indicate that in a limited area west of Obregon, Mexico, and in depths from the shore out to 19 fathoms, the population exists almost entirely of the heavy form with a swollen ridge on the siphonal canal. Elsewhere the left-handed whelk is more likely to be a lighter shell with a smoothly tapering canal. Throughout the shrimping grounds off Campeche, however, intergrades between these two forms occur frequently. Since these intergrades indicate interbreeding and a lack of reproductive isolation, there can be only one living species of left-handed whelk, and it must take the name of *Busycon perversum* (Hollister 1958) [Now called *Busycon (Sinistrofulgar) perversum pulleyi*].

It is clear that subspecies designations, localities, as well as slight morphological differences are the main criteria for certain appellations. Origins of the large sinistrally whorled *Busycon* used in various forms by prehistoric groups living some distance from the Gulf coast in the eastern and midwestern U.S. have been debated for years by archaeologists interested in tracking possible trading systems (Phillips and Brown 1975; Winters 1968; Hall 1981, 1992). The largest sinistrally whorled *Busycon* specimens are found the warm waters of both southern Florida, and southern Texas/northeastern Mexico, and although trained malocologists may be able to visually distinguish between the two areas based on slight morphological differences in living whole shell, these clues are obviously not discernable to archaeologists, especially when the shell in question has been reduced to an ornamental form.

One interesting controversy in Texas involves the origins of *Busycon* shell used to produce the large Form 1 pendants from Group 2 burials at the Ernest Witte Site, located in the Brazos River Valley. Grant Hall (1981, 1992) argues that the *Busycon* may not have originated from the Texas coast; instead he suggests Florida or Alabama as a possible source. Since other researchers support his claim (Steele 1988), and these results have a direct bearing on Archaic age marine shell distributions in Texas, a review of the situation is presented here.

Hall bases his conclusions on the following:

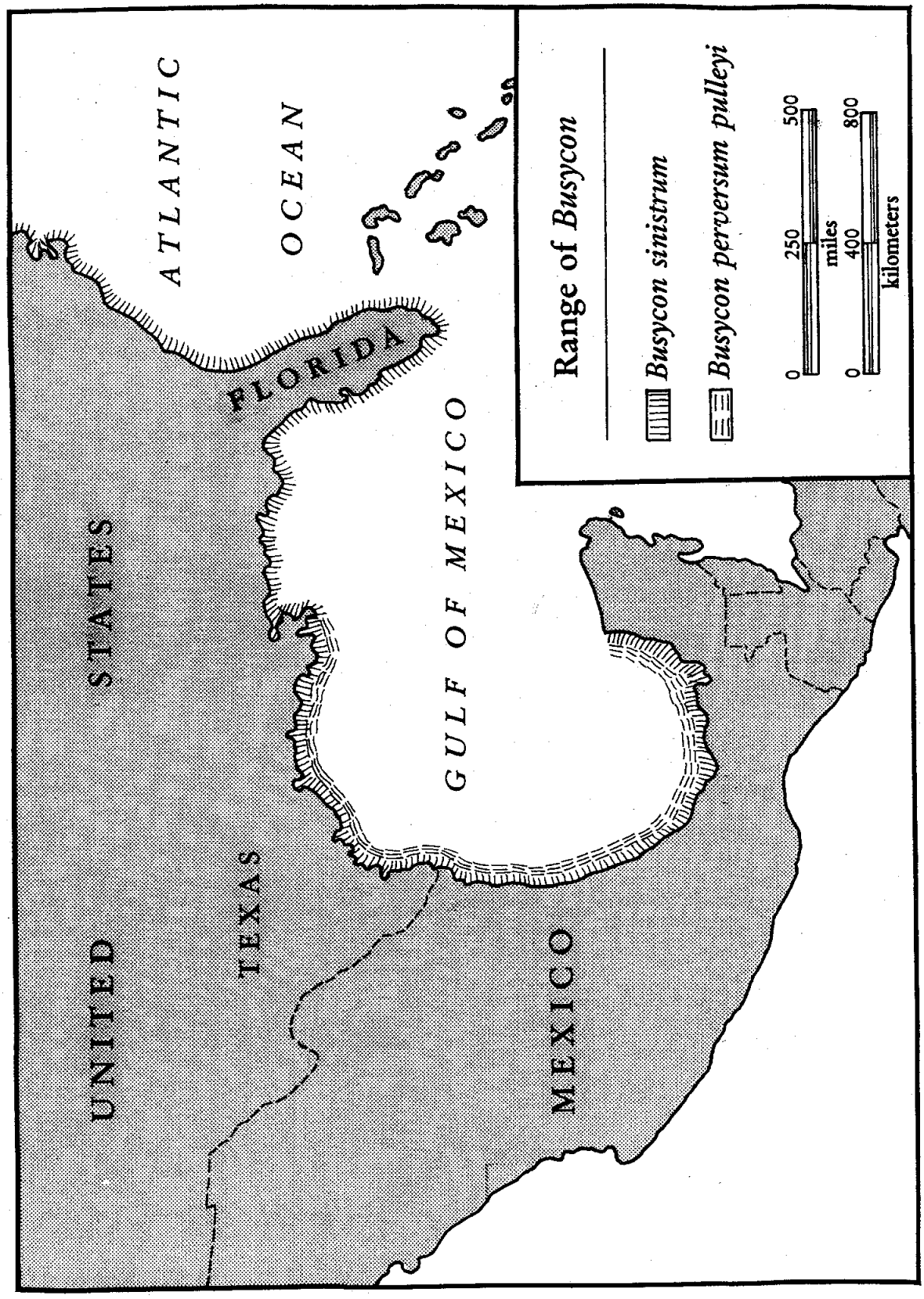

Figure 11.3. Map showing range of Busycon species.

1) Unusually large pendant forms included as grave goods in Late Archaic Group 2 burials at Ernest Witte Site are similar to "sandal-sole gorgets" found in graves of the Glacial Kame Culture area in Ohio, Indiana, Michigan, Wisconsin, Illinois, and northern Alabama (Griffin 1974). A possible trade route from Florida through Alabama and Mississippi is suggested by Griffin for the raw material for these gorgets.

2) At Ernest Witte, boatstones from the Ouachita Mountains of Arkansas, and corner tang knives from central Texas lend credence to the possibility that local inhabitants were involved, if only peripherally during a limited period of time (650 B.C-A.D 500), in the same southern interaction system that imported and exported a variety of exotic materials throughout the eastern U.S.

3) The absence of any known manufacturing locale in Texas for *Busycon* ornaments for this time period suggests that the raw material, if not the pendants themselves, were imported from outside of Texas. He has suggested Florida and/or Alabama based on investigation of both the occurrence and availability of *Busycon*, and the archaeological use of shell in this region.

4) Furthermore, manufacturing activity at Kent Crane and the Johnson Site in the Late Archaic seems to strictly relate to the production of marine shell tools (adzes, celts, hammers, gouges) and not to ornaments (at least, the finished shell artifacts which were ultimately deposited at the site were utilitarian tool forms).

5) Most of the sites yielding shell tools and manufacturing debris are clustered near the Copano and Corpus Christi bays in south Texas where *Busycon* is readily available, but ornamental shellwork (mainly pendants) is predominantly found at inland sites, northwest of this coastal area.

6) Other cemeteries in central Texas contemporary with Ernest Witte and that also yielded marine shell grave goods do not show any evidence of local marine shell artifact manufacturing activities. Evidence for on-site shell bead production is suggested, however, at a later time period at the Caplen Site where items associated with bead work were found in a female grave.

7) Hall points out that in the later Late Prehistoric period evidence for an established shell industry for ornaments and tools can be seen at Brownsville Complex sites in the Rio Grande Delta area. Especially important is that various stages of the manufacturing process can be followed by studying the refuse.

A counter argument published by Birmingham and Huebner (1991) does not support Hall's theory on non-local origin of the *Busycon* pendants at Ernest Witte. They reason that manufacturing debris would have more readily shown up in habitation areas, rather than in the mortuary sites cited by Hall in his study. Furthermore, they stress that local manufacturing from readily available shell was the most likely format during this time period. They mention evidence in Texas for geographically discrete styles of shell ornamentation which would suggest on-site shell modification.

All three researchers have plausible interpretations, and in fact, in Hall's (1992) rebuttal to Birmingham and Huebner, he stresses the point that his conclusions are based on critical reading of the available evidence; initially he had also assumed the shell originated from the Texas coast. Additional comments made here in this chapter on the subject of occurrence and distribution of *Busycon* may add fuel to the fire.

First, although this is not exactly disputed, despite the fact that Winters (1968) has erroneously influenced Hall as to the restricted range of left-handed *Busycon* in Florida, it should be documented that the less spiny and elongated form of *Busycon (Sinistrofulgar) perversum pulleyi* does exist along the Texas coast, and with the right amount of salinity and environmental conditions (i.e. access to oyster beds on which they prey, see Larson 1980) it is highly possible that extremely large-sized *Busycon* could have been collected from protected estuarine environments along the south Texas and northeastern Mexican coast. The left-handed *Busycon* is known to reach lengths of up to 40 cm in warmer waters in its southern range, which includes both southern Florida (Pendergast 1986) and southern Texas. Since the sinistrum form essentially blends with *Busycon (Sinistrofulgar) perversum pulleyi* it is not clear where it's southern range in Texas/Mexico actually stops. As stated earlier by Pulley, intergrades between the two subspecies occur as far south as Campeche, Mexico (see also Eaton's [1978] list of species found along the Campeche coast including two forms of the left-handed *Busycon*). It is possible, therefore, that raw material for the larger pendant forms could have theoretically come from the warmer waters of south Texas or northeastern Mexico.

T.E. Pulley, former director of the Houston Museum of Natural Sciences, and for whom the *Busycon (Sinistrofulgar) perversum pulleyi* was named, asserted in a letter to Grant Hall dated January

26, 1976 and in communications with Philip Phillips and James Brown (1978) that material from Spiro Mound, Oklahoma, including dippers from very large *Busycon*, appear to originate from Huastecan centers in northeast Mexico. Although Spiro Mound has a much later date (A.D. 1000-1500) than the Late Archaic age of pendants at Ernest Witte, an important factor is that Pulley, who had looked at hundreds of *Busycon* shell in his lifetime, suggested a western, rather than eastern, Gulf origin for this material.

Given the assumption that material for the *Busycon* pendants from Ernest Witte *could* have originated from south Texas or northeast Mexico, a look at other items in the Allens Creek marine artifact assemblage reveals similar origins. For example the Rice Olive, *Olivella dealbata*, occurs along the Texas coast as does the Common Atlantic Marginella, *Prunum apicina*; and of course shark's teeth and stingray spines. The range for Marginella is from Port Aransas south (Andrews 1977). Although only one marginella bead was reported by Hall, similar spire-lopped beads have been found in other burials dating from the Archaic Period; particularly at the Morhiss Site where hundreds were recovered (Hall 1981, 1994). MacNeish (1958) mentions their inclusion in Archaic period deposits in the Tamaulipas region of Mexico.

Another consideration is that preceramic data from coastal sites in Florida shows a predominance in the production of utilitarian rather than ornamental marine shell artifacts. Sandal-sole gorget forms as described by Hall are not indicated for this time period; circular gorgets were more common. Instead, large quantities of celts, gouges, hammers, picks, vessels and other functional items made from locally occurring *Busycon sinistrum* and *Strombus* are more common (Bullen 1978, Sears 1992, Luer and Almy 1982, Reiger 1981; see also Milanich et al. 1984 for comments on intensive whelk "sea farming" in southwest Florida). Although it is probable that the sandal-sole pendant as a finished product was not traded from Florida, it is certainly possible that the raw material from southern Florida was altered into pendant blanks at some other manufacturing locale (perhaps coastal Alabama or somewhere in the middle south where known shell manufacturing sites are known), and then reached Texas via down-the-line trading networks. It has been noted, however, that *Busycon* may have been traded to the interior as whole raw material and then locally altered; this scenario is especially indicated for the later Mississippian Period sites where distinctive regional styles and themes can be found on engraved shell gorgets (Muller 1987; Phillips and Brown 1978).

It should also be mentioned here that dates for the Glacial Kame Culture (1500-1000 B.C.) do not exactly correspond to the dates Grant Hall gives for Group 2 burials at Ernest Witte (650 B.C.-A.D. 500). The southern interaction sphere for this earlier time period as described by Walthall (1980) is centered in the coastal plain and contiguous areas of the southeast including Stallings Island, the terminal Lauderdale and the Wheeler culture of Alabama, Orange and St. Johns in Florida, and Poverty Point in the lower Mississippi Valley. Exchange items for this sphere include steatite, sandstone vessels, pipes, marine shell gorgets and beads, red jasper, stone bead effigies and fiber-tempered pottery.

As suggested by Hall, Ernest Witte inhabitants *could* have been recipients of goods from the later Hopewellian trading networks centered in the Midwest and Southeast (A.D. 1-400). At this time extensive exchange networks reached as far away as Yellowstone, Ontario, and Florida to obtain obsidian, silver, marine shell and a myriad of other non-local raw materials. The transport of marine shell from Florida into this extensive network has been discussed by Griffin (1967). By A.D. 600 the once vigorous trade system declined in both volume of exchange and geographic range, although one of the main items still being exchanged was marine shell from the Gulf coast (Waltham 1980).

Some observations I have come to after reexamining the literature are as follows:

1) Large-sized *Busycon* occurs in Gulf waters, either south of Tampa Bay, Florida or in south Texas/northeast Mexico. Coastal Alabama as a possible origin is not suggested.

2) Shell manufacturing in both coastal Florida and south Texas for the Archaic Period seems to be predominantly focused on the production of tools and utilitarian items. Therefore, whole shell was most likely traded inland and either modified as blanks elsewhere, or locally modified. Admittedly, this scenario paints me into a corner as to the material from Loma Sandia (Dreiss 1994, Hall 1992). At that site, part of the mortuary items for F. 165 included four pendants and one partially whole *Busycon* shell. It did not appear on close examination that all the *Busycon* pendants necessarily derived from the one modified shell, even though I noted that they could have since both the pendants and the shell were quite robust. On principal I support the idea that whole *Busycon* shell found archaeologically at inland sites, especially with obvious modification to the whorl or columella was imported for the purpose of local artifact production.

3) The Morhiss site, an Archaic cemetery and habitation locale in Victoria County, yielded both ornaments (Marginella beads, columella beads, circular gorgets) and shell tools in Archaic period deposits

(Campbell 1976), and should be considered when discussing the presence or absence of ornaments from sites located in the Gulf Coastal Plain.

4) The southeastern U.S., Mesoamerica, and the entire circum-Caribbean Gulf coastal area shared similar styles and uses of shell ornaments and tools. Some form of interaction, at least shared ideas, if not a limited exchange of materials, probably took place between these areas (see below discussion on the widespread distribution of Olive shell tinklers).

It may not be profitable, however, to spend much more time on this debate without first testing for regional elemental differences in the shell, a course of action proposed by both Hall (1992) and Birmingham and Huebner (1991) and now recently undertaken by Cheryl Claassen and Samuella Sigmann (1993). Their study has attempted elemental sourcing of 41 modern and archaeological *Busycon* specimens from locales in Texas, Florida, southeastern Atlantic and Gulf coasts, Kentucky, Illinois (Cahokia) and New York. They have ascertained that shell assay values do indicate regional differences in elements and signatures, especially in regards to magnesium ratios. Their sample is very small, nine samples from archaeological contexts, and there are quite a few problems with this initial study, but results are tantalizing and worth mentioning. Gulf waters of western Florida seem to be the origin for most of the *Busycon* shell from two Archaic sites in Kentucky, Indian Knoll and Ward; and from other Mississippian sites in the Mississippi Valley. One specimen from Ward, however, clusters with shell from extreme northern Mexico as do two possible specimens from Monks Mound at Cahokia. Because of several factors, including the unknown role of diagenesis, Claassen and Sigmann warn that the clusters for northern Mexico should not be taken too seriously until further samples are tested from this area. Future testing is also planned for archaeological *Busycon* from Texas and Florida by Jeff Huebner and Grant Hall. The outcome of these studies will be of great interest.

Oliva and Olivella Shell Artifacts

Oliva and *Olivella* shell beads and tinklers were found with seven burial features ranging in date from the Final Late Prehistoric to Early Historic periods. Four of these features are associated with infant, child or juvenile burials; the other three are two adult males, and the only adult female at the site buried with marine shell objects. It appears that *Oliva/Olivella* beads and tinklers may have been less frequently buried with adult males than were *Busycon* beads, although our data here is admittedly inconclusive.

Tinklers

Tinklers are made from the larger *Oliva sayana* (51-62 mm in length). Commonly the spire has been cut off below the shoulder with holes drilled or cut in the body, usually near the anterior canal. From burial features in the Rio Grande Delta tinklers have been found nestled with perforated canine teeth, presumably to achieve a "clapper" affect when suspended (Collins et al. 1969; Hester and Ruecking 1969). It is not certain what symbolic or economic factors led prehistoric people to bury their dead with these items, but most likely inclusion in burials had ritualistic importance; certainly the practice was widespread, especially in Central and South America.

In Mesoamerica, where *Oliva* tinklers are commonly found in burials, caches, and midden deposits, they were probably used as pendants or were sewn on clothing for ornamentation (Willey et al. 1965; Eaton 1978). Kidder et al. (1946) describes them as edging skirts of figures carved in stone monuments from Copan (Stelae A and B) and Quiriqua (Stelae F). Kidder (1947) notes in his study of Mesoamerican tinklers that the method of perforation has no apparent chronological significance. A combination of notching, sawing, perforating, drilling, carving, and placement of transverse cut to the spire is seen throughout the region from the Late Preclassic to the Postclassic Period. Some have been found carved in the shape of a human face or "death's head".

In Texas the occurrence of tinklers from archaeological deposits is not as common as in areas to the south but their presence signifies a technological link or shared ideology with regard to very specific treatment of the shell. It is suggested here that the importance and ritualistic use of the *Oliva sayana* tinklers in Texas may be associated with Circum-Caribbean and/or Mesoamerican practices.

Olivella

Most of the spire-lopped *Olivella* beads found in Texas exhibit little workmanship except for removal of the spire above the shoulder. Method of removal differs from the larger *Oliva* because the *Olivella* shell is fairly thin, so that removal of the spire by grinding or rubbing on a stone would be the more expedient than cutting. None of the *Olivella* or *Oliva* beads from Mitchell Ridge exhibit any degree of smoothing or finishing along the detachment edge.

Oliva/Olivella Chronology

At Mitchell Ridge there is little evidence to suggest technological changes in *Olivella* or *Oliva* bead modification. The earliest *Olivella* at the site are from Feature 86 (Final Late Prehistoric) and these are the smaller sized *Olivella minuta* beads strung together in one necklace. Most of the other Olive shell beads are from Protohistoric or Historic deposits.

The distinctive *Oliva sayana* tinklers date strictly to the Early Historic period at Mitchell Ridge. As can be seen in the distribution section of this chapter, Olive shell tinklers in Texas are predominantly a Protohistoric/Early Historic trait.

Oliva/Olivella Taxonomy and Range

The Lettered Olive, *Oliva (Ispidula) sayana*; Whitened Dwarf Olive *Olivella dealbata*, and Minute Dwarf Olive, *Olivella (Niteoliva) minuta* are three small gastropod members of the Family Olividae found on the Texas coast (Andrews 1977; see Figure 11.4, herein). Habitat for the larger Lettered Olive includes offshore and inlet areas along the coasts of North Carolina, Florida, gulf states including Texas, Mexico,West Indies, and Brazil. The Whitened Dwarf *Oliva* is known to burrow in the sand in inlet areas along the coasts of North Carolina, both sides of Florida, Texas, Yucatan and the West Indies. It commonly occurs throughout its range but is more prevalent to the east. The Minute Dwarf Olive, the smaller of the three, inhabits inlets and surf zones in Texas, Costa Rica, the Caribbean, West Indies and Brazil. Occurrence is common at times, but more prevalent to the south (Figure 11.4).

Occasionally archaeologists mistakenly use the terms *Oliva* and *Olivella* interchangeably, as a catch all category to identify beads or tinklers from this gastropod family. Care should be taken to identify the species in question especially from inland sites such as Arizona, for example, where *"Olivella"* has been found. The term *"Olivella"* is not sufficient description because there are several different species of *Olivella*, with various ranges, inhabiting both Atlantic and Pacific waters (refer to Bennyhoff and Hughes (1987) for an excellent review of Pacific coast *Olivella* bead distributions).

Furthermore, *Olivellas*, especially the Minute Dwarf Olive, are sometimes mistaken for the Common Atlantic Marginella, *Prunum (Leptogouana) apicina*. Marginella is about the same size, 12 mm, but broader across the shoulder with a short spire and longer aperture. Its range in the western Gulf is from Port Aransas south to the Yucatan and is commonly found in archaeological contexts, especially in south Texas, and Mesoamerica. Use of whole Marginella, especially as beads, has been documented from the Archaic on for the eastern United States (Banks and Winters 1975; Sempowski 1986; Hammett and Sizemore 1986; Sears 1982; Walthall 1980).

Marine Bivalve Artifacts

The *Crassostrea virginica* species of oyster inhabits brackish bays and estuaries along the eastern seaboard, the Gulf states, Mexico and the West Indies. Obviously utilized primarily as a food source prehistorically, the shell was only secondarily put to functional use; being robust it would have held up well to casual modification and employment. Along segments of the Texas coast unmodified oyster bivalves may have been used in lieu of flint as knives, scrapers, and digging tools (Aten 1983a, Steele 1988, Campbell 1947, Patterson 1990). Perforated oyster bivalves may have been hafted or used as net weights (Steele 1988, Campbell 1952).

Freshwater Mussel Artifacts

The use of ornamental objects made from locally available river mussel as grave inclusion is a fairly common and widespread practice. Usually very thin the forms vary from rectangular to square to

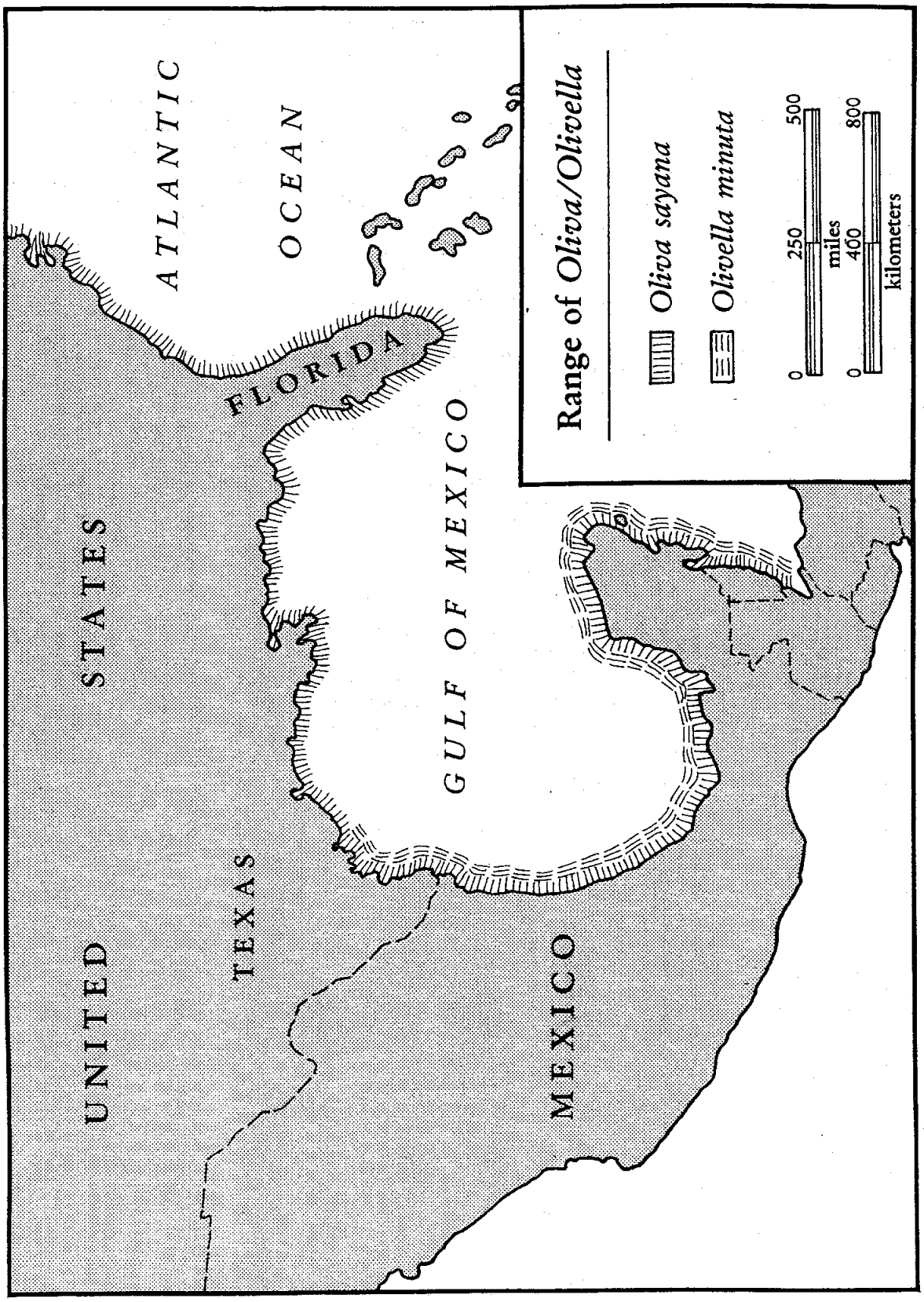

Figure 11.4. Map showing ranges of *Oliva sayana* and *Olivella minuta*.

triangular. In Texas, mussel shell pendants are reported from the Archaic up to the Historic period. In some of the burial contexts, the proximity of drilled triangular pendants to the skull suggests they were worn as ear-drops (Huebner and Comuzzie 1992).

The archaeological literature for Texas does not provide much information on the placement of whole freshwater mussel bivalves within graves. In the Caddo region whole mussel shells have been recovered from early historic graves; they reportedly contained pigments (Cole 1975; Banks and Winters 1975; Perttula 1992). Sometimes referred to as "spoons" in the archaeological literature, these items may have been used as containers to hold perishable items for the deceased. However, this is incongruent with the fact that some of the shell, including the ones at Mitchell Ridge, were found with the concave surface downward.

Distribution of Marine Shell Artifacts at Other Archaeological Sites

This section will focus on the spatial and chronological distribution of marine shell artifacts at other archaeological sites in central and south Texas. Most of the data will be presented in a series of tables with subsequent comments on the occurrence of columella beads, olive shell beads and tinklers, and marine and freshwater bivalves and ornaments. The following regions in Texas are examined:

I. Upper Texas Coast and Surrounding Region
II. Central Texas Coast and Coastal Prairie
III. Central Texas (inland)
IV. Caddo
V. South Texas and Rio Grande Delta

The present analysis does not include data on *Busycon* whorl pendant forms. Shell pendants found in Archaic and Late Prehistoric period burial contexts in Texas have been reviewed previously by Hall (1981, 1994), Taylor (1994) and Dreiss (1994). Primarily, the following analysis deals with temporal and geographical distributions of columella and *Oliva/Olivella* artifacts, beads and tinkler in eastern and southern Texas. Secondarily, available information is included for modified freshwater mussel and marine bivalves. The data below are presented geographically and by artifact class. An important clarification here is that site entries relate to the artifacts under study rather than to the whole marine artifact assemblage found at a particular site. For example, both whorl pendants and columella beads were recovered together from a number of sites but only the columella artifacts are mentioned in this analysis. Entries are recorded whether or not there was one or one-hundred items were found at a specific locale.

I. UPPER TEXAS COAST AND SURROUNDING COUNTIES

Columella Beads

Crestmont Site (Vernon 1989)	Burial	Late Archaic
41WH44 (Black et al. 1992)	Burial	Late Archaic
Ferguson Site (Patterson et al. 1993a)	Burial	Late Archaic
Bowser Site (Patterson et al. 1993b)	Burial	Late Archaic
Piekert site (Kindall 1980)	Burial	Late Archaic
Harris Co. Boy's Sch. (Aten et al. 1976)	Burial	Late Prehistoric
Shell Point (Hole and Wilkinson 1973)	Burial	Late Prehistoric
41GV53 (Hines 1992)	Burial	Late Prehistoric
41CH13 (Ambler 1973)	Burial	Late Prehistoric
The Caplen Site (Campbell 1957)	Burial	Protohistoric
Sabine Lake Area (Aten et al. 1976)		

Columella "Dangles"

Crestmont Site	Burial	Late Archaic
Albert George (Walley 1955)	Burial	Late Archaic

Columella Segments

41GV6 (Aten 1983a)	Surface
41CH31 (Aten 1983a)	Surface
Olive Shell tinklers	
Shanklin (Hudgins 1984)	Surface Historic
Olivella/Oliva Beads	
41CH13	Burial Late Prehistoric
The Caplen Site	Burial Protohistoric
Utilized Freshwater Mussel	
Caplen Site	Midden Protohistoric
Shanklin	Surface Historic
Perforated Oyster and Marine Bivalves	
Caplen Site	Burial Late Prehistoric
41CH13	Burial Late Prehistoric
Modified Marine Bivalves	
41GV53	Burial Late Prehistoric
J.D. Wells Site (Patterson 1990)	Midden Late Prehistoric
Upper Coast (Aten 1983a)	
Whole Marine Bivalves	
Jamaica Beach (Ring 1963; Aten et al.1976)	Burial Late Prehistoric
Caplen Site	Burial Protohistoric
Shanklin (41WH8)	Surface Historic
Upper Coast	

Data from archaeological sites located on the upper Texas coast and surrounding area come from Galveston, Harris, Chambers, Fort Bend, Wharton Counties and from the Sabine Lake area. The distribution of columella bead shapes is seen in burial contexts in every time period, from the Late Archaic to the Historic. *Oliva* tinklers, conversely, seem to be an Historic period phenomenon for this region, although they occur earlier in the Rio Grande Delta region of south Texas, and northeast Mexico.

With the exception of evidence from Mitchell Ridge and a few other sites, generally there is a low frequency of freshwater mussel use, either for ornaments or as whole bivalves included as grave offerings. Such occurrence seems to be more common at inland sites in central Texas and in the Caddo area of northeast Texas. The use of whole marine bivalves, perforated or unmodified, was found in every time period in both burial and occupational contexts.

Marine shell artifacts at both the Caplen Site and the Harris County Boy's School cemetery sites resemble some of the items associated with Mitchell Ridge burials. These sites, unfortunately, have uncertain dates and/or no strong Historic component and therefore direct temporal comparisons cannot be made. Very few, if any, historic sites comparable to Mitchell Ridge are available for comparison on the upper Texas coast.

In the earlier Late Prehistoric and Protohistoric periods, however, columella bead forms, (cylindrical and discoidal) are found as grave inclusions at both Harris County Boy's School and the Caplen Site. Bead styles presented by Aten et al. for Harris County Boy's School are of interest here mainly because they represent every bead type found at Mitchell Ridge and several types not present at Mitchell Ridge, specifically the spherical forms, Styles E and F (Aten et al. 1976: Figure 14). Curiously, the thin walled Style G beads derived from one burial (Burial 30) at the site are similar, if not identical, to "wampum-like" beads found in an Historic burial (Feature 64, Burial #4) at Mitchell Ridge. It is not clear whether this rarely found "wampum-like" form existed in the time period suggested by Aten et al. (1976) for the Harris County Boy's School (A.D. 600-A.D. 950), or if Burial 30 represents a later time period at that site.

Also noteworthy is the fact that only one disk-shaped columella bead was found at Harris County

Boy's School, unlike a higher percentage of similar style bead prevalent at Mitchell Ridge. Disk-shaped beads, probably of columella, were also found at the Caplen Site. Unfortunately, and this is the case for many reports, Campbell (1957) does not distinguish between columella and whorl disk-shaped beads. Since occurrence of the two forms of disk-shaped beads may be chronologically significant it is important to standardize marine artifact descriptions. Likewise, for the *Oliva* beads found at the Caplen Site; Campbell's description is not clear. "Small *Oliva* shells" may actually refer to the smaller *Olivella* shell.

II. CENTRAL TEXAS COAST AND COASTAL PRAIRIE

Columella Beads		
Morhiss (Campbell 1976)	Burial	Archaic
Webb Island (Campbell 1956; Hester 1969b)	Midden	Late Prehistoric
Wedemeir Site (Janota 1980)	Private Collection	
41VT26 (Janota 1980)	Private Collection	
41VT34 (Janota 1980)	Private Collection	
Dry Creek (Janota 1980)	Private Collection	
Columella "Dangles"		
TX West Indies (Huebner & Birmingham 1991)	Burial	Late Archaic
Pat Dunn (Hudgeons & Hester 1977)	Burial	
McDonald Bayou Site (Janota 1980)	Private Collection	
Dry Creek (Janota 1980)	Private Collection	
Modified Columella Segments		
Kent Crane (Campbell 1952)	Midden	Late Archaic
Johnson Site ((Campbell 1947)	Midden	Late Archaic
Ingleside Cove Site	(Story 1968)	Late Archaic
Swan Lake Site (Prewitt et al. 1987)	Surface	Arch/Late Prehist
Matagorda Bay Survey (Fritz 1975)	Surface	Late Prehistoric
Live Oak Peninsula (Howard 1984)	Survey	Arch/Late Prehist
Olive Shell Tinklers		
41VT34	Private Collection	
Olive/Olivella Shell Beads		
41VT31 (Janota 1980)	Private Collection	
41SP11 (Howard 1984)	Survey	Late Prehistoric
Live Oak Point Site (Campbell 1958b)		
Ornamental Freshwater Mussel		
Blue Bayou (Huebner & Comuzzie 1992)	Burial	Arch/Late Prehis
Perforated Oyster and Marine Bivalves		
Johnson Site	Midden	Late Archaic
Kent Crane	Midden	Late Archaic
Ingleside Cove Site	Midden	Late Archaic
Matagorda Bay Survey	Surface	Late Prehistoric
Modified Marine Bivalves		
Allens Creek Sites (Hall 1981)	Bur/Sur.	Late Archaic
Ingleside Cove Site	Midden	Late Archaic
41SP78 (Hester & Corbin 1975)	Burial	Late Prehistoric
Green Lake (Wingate & Hester 1972)	Burial	Late Prehistoric
Palmetto Bend Reservoir (McGuff 1978)		

Whole Marine Bivalves

Morhiss (41VT1)	Midden	Archaic
Blue Bayou (41VT9)	Burials	Arch/Late Prehis.
Green Lake (41CL13)	Burials	Late Prehistoric

Archaeological sites on the central Texas coast and surrounding littoral area cited in this section are located in Victoria, Matagorda, Calhoun, Aransas, San Patricio, and DeWitt counties and mostly date to the Late Archaic Period. References do not include Historic component data.

As mentioned by previous researchers, columella tube and disk-shaped beads are not common in this area of the Texas Coast. Except for the Archaic period Morhiss Site and a few other poorly provenienced locations, beads of any kind are scarce. Although it appears that the possession of ornamental shell may not have been a high priority for these coastal group, most of the data we have for this area do not come from mortuary contexts. In the few mortuary related cases cited above, columella beads, mussel shell pendants and perforated marine bivalves are reported. Localized use of the columella portion of the *Busycon*, however, is suggested by the presence of "dangles" and modified segments. One speculative idea is that the elongated columella segments, "dangles", discussed more thoroughly in the next section, may have been traded from the coast; but then locally reduced at a later time to a smaller columella bead forms.

Since it is clear that *Busycon* utilitarian items (picks, hammers, gouges, adzes, awls, celts, etc.) were found to be manufactured in great abundance, it is curious that evidence for ornamental shell use is lacking. If goods (lithics; see Hester 1970) were being traded to the coast in exchange for raw material (shell), payment of course, would not be shell. Whereas, Inland groups on the receiving end, would have an opportunity to locally alter the precious raw material to their specific needs, perhaps utilizing some of the shell for units of currency and/or wealth identification.

Also noteworthy, but not surprising, is the lack of freshwater mussel at these coastal sites. Modified marine shell bivalves are more abundant. The reverse is true for inland sites where river mussel is substituted for ornamental and utilitarian shell use.

III. CENTRAL TEXAS (INLAND)

Columella Beads

Ernest Witte (Hall 1981)	Burial	Late Archaic
Goebel Site (Duke 1981)	Burial	Late Archaic
Brandes Site (Highley et al. 1988)	Burial	Late Archaic
Lock Farm (TARL; Hall 1994)	Burial	Late Archaic
41LK250 (Hall et al. 1986)	Surface	Late Archaic
41LK8 (Hall et al. 1982)	Midden	Arch/Late Prehis
Loeve Fox (Prewitt 1974)	Burial	Late Prehistoric
41MC296 (Hall et al. 1986)	Midden	Late Prehistoric
Fall Creek (Jackson 1938)	Midden	Historic
Stansbury Site (Stephenson 1970)	Burial	Historic
Bexar County (McReynolds 1982)	Disturbed	

Columella "Dangles"

Ernest Witte (41AU39)	Burial	Late Archaic
Olmos Dam (Lukowsky 1988)	Burial	Late Archaic
41ME42 (Chandler 1991)	Private Collection	
41ME43 (Chandler 1991)	Private Collection	
Little Bethlehem (Hall 1981)	Private Collection	

Modified Pointed Columella Segment

The Brandes Site (41AU55)	Burial	Late Archaic

Olive Shell Tinklers		
41LK201 (Highley 1986)	Midden	Late Prehis/Hist
Fall Creek (Llano/San Saba)	Midden	Historic
Olmos Basin (Chandler 1991)	Private Collection	
41SR251 (Mokry 1979)	Surface	
Olivella Shell Beads		
Bering Sinkhole Site (Bement 1991)	Burial	Archaic
Ernest Witte	Burial	Late Archaic
Leonard K (Hall 1981)	Surface	
41BX300 (Highley 1986)		
Ornamental Freshwater Mussel		
Olmos Dam (41BX1)	Burial	Late Archaic
Loeve Fox (41WM230)	Burial	Late Prehistoric
Perforated Freshwater Mussel Bivalve		
41LK74 and 41LK94 (Hall et al. 1986)	Midden	Late Prehistoric
Stansbury Site (Whitney Reservoir)	House	Historic
Fall Creek	Midden	Historic
Whole Freshwater Mussel Bivalve		
Ranney Creek (TARL files)	Burial	Late Archaic
Frisch Auf! (Hester & Collins 1969)	Burial	Late Prehistoric
Fall Creek	Midden	Historic
Modified Freshwater Mussel		
Olmos Dam (41BX1)	Burial	Late Archaic
41CN19 (Lintz 1992)	Midden	Late Prehistoric
41CC131 (Lintz 1992)	Midden	Late Prehistoric
41RN169 (Lintz 1992)	Midden	Late Prehistoric
41LK74	Midden	Late Prehistoric
41LK94	Midden	Late Prehistoric
41LK67 (Brown et al. 1982)	Midden	Late Prehistoric
41LK201 (Highley 1986)	Midden	Late Prehistoric
Modified Marine Bivalve		
41LK201	Midden	Late Prehistoric

Data for this section come from archaeological sites located in the following counties: Bexar, Medina, Comal, Llano, Austin, Williamson, Live Oak, McMullen, Kerr, Starr, Concho, Coleman, Runnels, Coryell and Fayette. A chronological range from Late Archaic to Historic is represented.

At inland sites columella beads are found associated with Late Archaic, Late Prehistoric and Historic mortuary features; their occurrence, however, is not frequent. In most cases, less than five items are found at any one site. Columella "dangles" such as those from Late Archaic burials in central Texas are not found at Mitchell Ridge, but are mentioned here because of their uniqueness and possible use as a bead. They are fashioned from long sections (10-30 cm) of columella, but instead of being perforated along the long axis as with tube beads, some are perforated laterally on either tapered end. This method allows the columella segments to be strung end to end as shown in the Allens Creek report (Hall 1981: Figure 48). Possibly, a different use is inferred with some of the larger-sized "dangles" with elbow-style drilling, or perforations on one end only (see Hudgeons and Hester 1977; Chandler 1991). These forms seem to cluster at Archaic mortuary sites in central Texas but are not unique to Texas. For example, identical items have been found at Middle Missouri sites (ca AD 1000 to 1300) in South Dakota (Ludwickson et al.1993) and in the Carolinas (Hammett and Sizemore 1986).

Two unusual mortuary items at the Brandes Site are unique to this area. These columella artifacts are very long (17-21 cm), cylindrical, and pointed on one end. Counterparts have been found at Tamaulipas sites in northeast Mexico (MacNeish 1958).

Data on the occurrence of olive shell tinklers are very limited, but this ornament form seems to be primarily associated with Historic period proveniences, while *Olivella* beads appear sporadically in earlier periods. As mentioned previously, this trend is also shown for sites located in the upper and central coastal areas. Also, in central Texas, artifacts of freshwater river mussel are more common than marine shell items of any kind.

IV. CADDOAN

Columella Beads		
Frankston Focus Sites (Suhm et al. 1954)	Burial	Late Prehistoric
A.C. Saunders (Kleinschmidt 1982)	Midden	Protohistoric
Hackney Site (Cole 1975)	Burial	Historic
Clements Bro. Farm (Lewis 1987; Perttula 1992)	Burial	Historic
Gilbert Site (Lorrain 1967)	Midden	Historic
Roseborough Lake (Perttula 1992)	Burial	Historic
Allen Site (Cole 1975)	Burial	Historic
Allen Focus Sites (Suhm et al. 1954))	Burial	Historic
Bentsen Clark (Banks and Winters 1975)	Burial	AD 1300
Wampum-like Columella Beads		
Vinson (Smith et al. 1993)	House	Historic
Wichita-Norteno Focus (Harris & Harris 1967)	Historic	
Columella Segments (Double Pointed Pins)		
Allen Focus Sites (Upper Neches)	Burial	Historic
Wichita -Norteno Focus		Historic
Olive Shell Tinklers		
Gilbert Site	Midden	Historic
Hackney Site (Upper Neches)	Burial	Historic
Ornamental Freshwater Mussel		
Frankston Focus Sites	Burial	Late Prehistoric
Gilbert Site	Midden	Historic
Vinson Site (Yates 1993)	House	Historic
Bentsen-Clark	Burial	AD 1300
Perforated Freshwater Mussel Bivalves		
Good Hunt Site (Perttula 1992)	Burial	Protohistoric
A.C. Saunders Site (41AN19)	Midden	Protohistoric
Clements Brother's Farm (41CS25)	Burial	Historic
Bentsen-Clark	Burial	AD 1300
Modified Freshwater Mussel Bivalves		
Frankston Focus Sites	Burial	Late Prehistoric
A.C. Saunders Site	Midden	Protohistoric
Vinson (41LT1)	House	Historic
Walton Site (Story 1985)	Surface	Historic
Bentsen-Clark	Burial	AD 1300
Whole, Unmodified Freshwater Mussel		
Good Hunt Site	Burial	Protohistoric

Clements Brother's Farm	Burial	Historic

Most of the archaeological sites reviewed for this section are Historic or Protohistoric and the marine shell artifacts occurring at these Caddo sites derive from both mortuary and occupational features. The practice of placing strings of columella and olive shell beads and tinklers with the dead was fairly widespread in the Caddo area. Similarities of marine shell artifact forms and the mortuary practices related to these items at Mitchell Ridge suggests that the two areas may have been linked ideologically.

This is the only other region wampum-like beads are evident. Although rarely found archaeologically in Texas, the use of wampum as currency was a widespread phenomenon in the eastern United States, especially in the post-contact era. Trade networks via Louisiana-Caddo interactions may have facilitated movement of these items into the region. There is little historical evidence to suggest that wampum-like beads were being made in Texas.

V. SOUTH TEXAS AND RIO GRANDE DELTA

Columella Beads		
Oso Site (TARL; Martin 1930)	Burial	Late Prehistoric
Anderson Collection (Anderson 1932)	Surface	Late Prehistoric
McAllen Site (Hester & Rogers 1971))	Burial	Late Prehistoric
Floyd Morris (Collins et al. 1969)	Burial	Late Prehistoric
41NU103	Midden	Late Prehistoric
41KL13 (Hester 1969b)	Survey	
George C. Martin Coastal Coll. (Janota 1980)	Private Collection	
Modified Columella Segments and Bead Blanks		
Oso Creek Sites (Steel & Mokry 1983)	Midden	Late Prehistoric
Kirchmeyer Site (Headrick 1993)	Midden	Late Prehis/His
Anderson Collection	Surface	Late Prehistoric
Alazan Bay Area (Highley 1980)	Private Collection	
George C. Martin Coastal Collection	Private Collection	
Olive Shell and Tinklers		
Floyd Morris Site (41CF2)	Burial	Late Prehistoric
Ayala Site (Hester & Ruecking 1969)	Burial	Late Prehistoric
Cameron County Sites (MacNeish 1958)	Late Prehistoric	
McAllen Site (41HG27)	Burial	Late Prehistoric
Anderson Collection	Surface	Late Prehistoric
41HG89 (Day et al. 1981)	Survey	
George C. Martin Coastal Collection	Private Collection	
Olive/Olivella Shell Beads		
Ayala Site	Burial	Late Prehistoric
McAllen Site	Burial	Late Prehistoric
Anderson Collection	Surface	Late Prehistoric
Kirchmeyer Site	Midden	Late Prehis/Hist.
Cameron County Sites	Late Prehistoric	
George C, Martin Coastal Collection	Private Collection	
Oso Creek Sites		
Ornamental Freshwater Mussel		
Oso Site (41NU2)	Burial	
Kirchmeyer Site	Midden	Late Prehis/His
Anderson Collection	Surface	Late Prehistoric

Modified Freshwater Mussel		
Rio Grande River (Chandler & Kumpe 1992)	Surface	
Perforated Marine Bivalves		
McKinzie Site (Ricklis 1988)	Midden	Archaic
Floyd Morris	Burial	Late Prehistoric
Berryman Site (TARL files)	Burial	Late Prehistoric
Anderson Collection	Surface	Late Prehistoric
41KL13 (Collins et al. 1969; Hester 1969b)		
Whole Marine Bivalves		
Oso Creek Sites	Middens	Late Prehistoric
Alazan Bay Area	Private Collection	

Most of the archaeological data from littoral south Texas and the Rio Grande Delta area date to the Late Prehistoric/Brownsville Complex. A developed shell industry is evident for this time period; as mentioned earlier, numerous items seen in the A.E. Anderson Collection show various manufacturing stages.

Distributions of columella and olive shell beads and tinklers in Brownsville Complex burials, and the presence of modified columella segments and bead blanks in occupational areas may reflect localized manufacturing activities and a ritualized practice of then placing these items with their dead. A similar pattern is not suggested for the earlier Late Archaic Period sites on the central coast, but again available comparative mortuary data for this earlier period is lacking.

It is difficult to determine whether Mitchell Ridge inhabitants obtained any of their shell (in finished form or as raw material) from the Brownsville area. This is an interesting question because typically we would assume that the raw material for shell artifacts found on the upper coast would be locally derived. However, *Busycon* is not as common or as robust on the upper coast as it is further south. Since columella bead forms are identical between the two areas, as they are throughout Texas, is possible they imported raw material from southern coastal localities. Curiously, other Brownsville Complex shell artifact forms, including various shapes of *Busycon* whorl pendants and disks are not commonly found in archaeological deposits on the upper Texas coast.

Also noteworthy is the presence of *Oliva sayana* tinklers in the Late Prehistoric Period in south Texas. Most of the other Texas data points to exclusive Historic period usage of the artifact. Tinklers and carved *Oliva* beads have a long history of use, however, in the Haustec and Veracruz area of Mexico, and other parts of Mesoamerica. In discussing similarities between the two cultures on either side of the Rio Grande River, MacNeish (1958)notes that the marine shell artifacts are almost identical. A greater variety of shell artifact forms, however, have been found at archaeological sites in Tamaulipas, Mexico.

Discussion and Summary

A review of the available literature for the distributions of conch columella and olive shell ornaments has shown that geographical, environmental, chronological and cultural factors may have contributed to the varying patterns of archaeological marine shell use in the eastern half of Texas. At Mitchell Ridge various forms of marine and freshwater shell were used as part the community's mortuary ritual, and except for some regional variation, this practice has been noted throughout the study area.

In the Late Archaic Period, mortuary use of marine shell was sporadic but widespread, especially in central Texas. *Busycon* ornaments including columella beads; unusual triangular-shaped pendants, some with punctations; and columella "dangles" characterize this period. The use of columella beads seems to be more prevalent on the upper Texas coast as far north as the Sabine Lake area and most likely into coastal Louisiana. Along the central and southern coast of Texas, large amounts of locally available *Busycon* were being used for tools, probably in lieu of readily available lithics. Shoreside production of utilitarian items in coastal areas devoid of lithics has been reported throughout the Gulf Coast and circum-Caribbean coastal region (see references for Mississippi [Davis 1984], Florida [Bullen 1978; Reiger 1979, 1981], Georgia [Larson 1980], and the West Indies [Watters 1981]).

To the south an increased use in shell artifacts is seen in the Late Prehistoric Period, especially

in the Rio Grande Delta area, where ornaments and tools are associated with occupation and mortuary activities. Influence from Mexico is suggested by the similarity between shell artifact forms on both sides of the Rio Grande River, and the increased occurrence of *Oliva Sayana* tinklers in south Texas.

Where historic data are available, primarily in the Caddo area, strings of columella and olive shell beads and tinkler have been noted with interments in cemetery areas. Like the historic burial features at Mitchell Ridge, occasionally shell beads have been found strung with European glass trade beads. Outside of Texas into Arkansas and Oklahoma, mortuary data reveal similar patterns. For example, at the Cedar Grove Site in the Red River Valley of Arkansas, Late Caddo burials are accompanied with conch shell bracelets and necklaces. Also common was the inclusion of whole mussel shells, supposedly containing pigments and other items (Trubowitz 1984).

Unfortunately, there is not enough shell artifact data from coastal Louisiana to make any kind of direct comparisons with the Mitchell Ridge marine artifact assemblage. A Marksville related component on Big Oak Island contained a mass burial with associated *Busycon* cups and beads. Apparently, earlier Tchefuncte burials are not usually associated with funerary artifacts.

Further afield in southeastern and midwestern America, cylindrical and/or spherical columella shell beads, *Busycon* gorgets and other marine shell artifacts have been found with burials at a variety of Late Archaic sites. A few examples include Indian Knoll in Kentucky (Webb 1946; Winters 1968), the Ozark Bluff Dweller culture of Arkansas (Harrington 1960), and the Pickwick Burial Complex of northern Alabama and the Tennessee Valley where children were more frequently buried with mortuary goods than adults (Walthall 1980).

From Hopewellian sites, columella beads, Marginella, *Olivella*, conch shell cups and various forms of pendants and gorgets are reported. A representative sample includes data from Helena Mound in Arkansas (Morse and Morse 1983) and Copena sites in Alabama. The post-Hopewell Weeden Island mortuary complex of northern Florida, southern Georgia and southern Alabama was also associated with these marine shell artifacts. A high percentage of child burials with Marginella, columella beads, and *Busycon* cups were found in the Alabama River Region (Walthall 1980).

Numerous types of grave goods including shell beads, gorgets, earspools and hair ornaments were associated with Mississippian and Southeastern Ceremonial Complex affiliates. These include such sites as settlements in the Tennessee Valley; Moundville, Pinson Cave, Perry, and Kogers Island in Alabama; Etowah in Georgia (Walthall 1980); Spiro in Oklahoma; Cahokia in Illinois; Cherry Valley in Arkansas; and sites in the central Mississippi Valley (Morse and Morse 1983). A change in marine artifact styles are evident at Late Period Mississippian sites and Nodena Phase sites distributed along the Mississippi River. Knobbed pins and scalloped gorgets of shell are common forms in the Protohistoric period, but also the use of several forms of columella beads also accompany burials.

Some contact period sites worth mentioning because of the association of columella shell beads with glass beads and other European artifacts are the King Site and Brown Farm in Georgia; Terrapin Creek in Alabama; Williams Island in Tennessee; and Johnstone Farm and Bear Creek sites in Florida (Smith 1987; Walthall 1980). The reader is referred to Ceci (1986) for research on archaeological shell beads and the history of wampum use in the northeastern United States.

It is clear that *Busycon* shell was obviously of sufficient value to be traded widely, covering an area from the Gulf Coast to Ontario. Long-distance exchange of *Busycon*, and to a lesser extent, other marine shell has been documented from the Middle Archaic to the Historic Period, but the amount of exchange has fluctuated over time and space.

The use of marine shell items associated with mortuary ritual at Mitchell Ridge persisted for a long period of time with socioeconomic implications. Below are a few concluding comments based on the data from Mitchell Ridge:

1) Bead forms and function were not static. Evolution of shell bead use in mortuary ritual over a period of about 1500 years suggests an enduring symbolic and/or economic meaning to the local inhabitants.

2) Inclusion of shell ornaments in mortuary contexts and utilitarian objects of shell in midden deposits is probably significant and may suggest that labor-intensive shell beads were valued beyond the worth of the raw material itself. Otherwise, casual occurrence of utilitarian conch shell pieces in occupational areas would be less common.

3) The lack of any *Busycon* gorgets or pendants at Mitchell Ridge is probably significant and may indicate a different value and/or identification system for these objects. It is also suggested that local

adaptations to various extra-regional trends in marine shell use was operational at the site.

4) Area 4 at Mitchell Ridge may have been reserved for burials of important individuals given the high proportion of shell artifacts and other grave goods found with the interments in this area of the site.

5) The fact that children were commonly found buried with marine shell may indicate that status was ascribed at birth.

6) Shell ornaments as heirloomed objects have not been directly dealt with in this paper, but should not be ruled out.

7) Spiritual beliefs, wealth/status identification and mortuary ritual may have been closely integrated systems for the Mitchell Ridge inhabitants.

Bird Bone Whistles

Eleven bird bone whistles were found in association with six burials. One was with the two juvenile token burials in Feature 28, one was with a token burial in Feature 82, two were with the semiflexed adult male in Feature 86, two were with Burial 1 in Feature 64, an adolescent female, four were associated with Burial 4, Feature 64, a young adult male, and one was in the bundle burial in Feature 63, which contained the disarticulated bones of an infant and a young child, and the cremated bones of at least one adult and one subadult. One additional specimen may be represented by the large bird ulna fragments found in the secondary cremation, Feature 65-A, but this is excluded from further consideration because of uncertain identification as a whistle. Chronologically, the relevant burials range from the Final Late Prehistoric (Feature 86) through the Protohistoric (Feature 82) and into the Early Historic Periods (Features 63 and 64).

All of the whistles found with burials are made from the ulnae of whooping cranes. A photograph and measurements of four complete specimens were sent to Storrs L. Olson, Curator, Division of Birds, the National Museum of Natural History, Smithsonian Institution, who stated that "the very large size of the specimens...makes it virtually certain that these instruments were all manufactured from the ulnae of whooping cranes (*Grus americana*) rather than sandhill cranes (*Grus canadensis*)" (Olson, pers. comm. 7/31/93).

Several features are shared by most or all eleven specimens. Ten are sufficiently complete for determination of length, which ranges from 258 to 300 mm (see Table 11.3). The proximal and distal articular ends of the ulnae are, in all cases, cut and/or reamed, effectively creating a hollow tube open at both ends. In all but one case, parts of the proximal articular condyles are present, since the openings at this end consist of more or less round holes aligned with, and about the same diameter as, the inner hollow of the bone. The exception is the specimen from Feature 28 (illustrated in Figure 8.12), on which the condyles were cut or broken off. Among the nine specimens which are sufficiently complete to show the original configuration of the distal ends, the condyles have been cut off in three cases and partially retained in six instances. All specimens bear a single air hole in the inner surface of the bone near the distal end (excepting the specimen from Feature 28, which is incomplete and missing the hole; see Figure 8.12). In four cases the holes are oval in outline, and have smoothed edges (e.g. Figure 8.18). In the other six cases, the holes are rectangular, with edges that are unsmoothed or only partly smoothed (e.g. Figure 8.45, a-c).

Of the ten specimens which retain essentially intact distal ends, four have asphaltum plugs placed immediately beneath the air hole. The plugs are roughly triangular in longitudinal cross-section (Figure 11.5) and are about 2 cm long. They are placed against the inner surface of the wall of the bone opposite the air hole, and fall just short of contacting the hole. In most cases, the plugs still adhere to the bone, suggesting insertion and shaping of soft, heated asphaltum. The plugs presumably served to constrict and channel air flow, thus helping to produce the desired sound in the instruments (unfortunately, none of the specimens still produce sound). The four specimens without asphaltum plugs may never have had them, since they show no visible traces of asphaltum on the inner surface of the bone (all of the whistles were removed from the ground with extreme care, so there is no possibility that asphaltum plugs were present but somehow dislodged and missed during excavation). Perhaps in some cases plugs were made out of some kind of perishable material. Alternatively, asphaltum plugs perhaps fell out of the whistles, or were intentionally removed, prior to burial, and were not sufficiently well bonded with the bone to leave visible traces.

Four of the eleven whistles are decorated with engraved lines that form geometric patterns.

Table 11.3 . Data on bird bone whistles from burials at Mitchell Ridge.

Provenience	Dimensions (mm.) L	max. Dia.	min. Dia.	Shape of hole	Dimensions (mm.) of hole L	W	Plug: Present / Absent	Decoration	Period
Feature 28	indet.	14.0	9.8	indet.	NA	NA	absent	engraved	Late Prehistoric
Feature 63 Bundle	268.3	21.0	10.0	rectangular	10.2	NA	absent	none	Early Historic
Feature 64 Burial 1	281.0	25.3	10.2	rectangular	12.0	4.7	present	none	Early Historic
Feature 64 Burial 2	285.0	25.0	10.0	rectangular	13.0	5.3	absent	none	Early Historic
Feature 64 Burial 4	288.0	19.7	10.1	rectangular	12.0	4.8	absent	none	Early Historic
	300.0	27.8	10.1	rectangular	15.0	5.1	absent	none	
	268.8	23.0	10.0	oval	10.2	5.0	present	none	
	285.3	23.8	9.8	rectangular	11.0	5.0	present	none	
Feature 82	258.0	20.0	9.8	oval	9.3	6.0	present	engraved	Protohistoric
Feature 86	287.2	24.1	9.7	oval	11.1	6.5	absent	engraved	Late Prehistoric
	270.0	20.2	10.0	oval	12.0	8.0	absent	engraved	

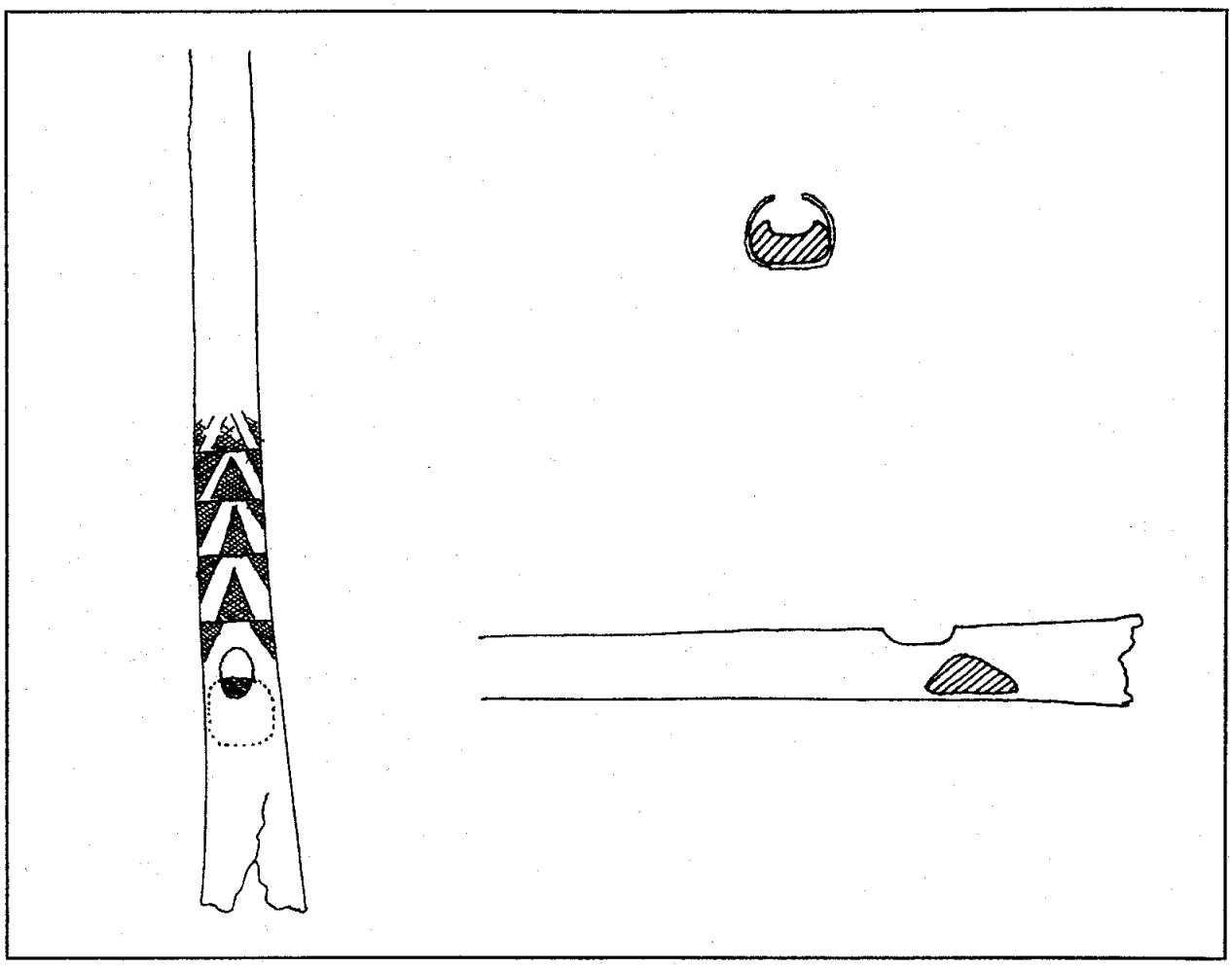

Figure 11.5. Three views of Whooping crane ulna whistle from Feature 82 at Mitchell Ridge, showing position of asphaltum plug.

Interestingly, all of the decorated specimens demonstrably or inferably pertain to the Late Prehistoric or Protohistoric Periods, and all of the undecorated specimens are from Early Historic burials. Two of the decorated whistles are from the Final Late Prehistoric burial in Feature 86, and one comes from Feature 82, a Protohistoric burial. The fourth decorated specimen is from Feature 28 which, although undated, is within a cluster of burials that date mostly to the Late Prehistoric or Protohistoric Periods.

The three decorated specimens from Area 4 (from Features 82 and 86) share some basic decorative approaches. In all cases, the engraved designs are on the same side of the instrument as the air hole. In each instance, the decoration consists of a repetition of a geometric designs running along the bone from some distance below the proximal end to just short of the air hole. In all cases, the designs are outlined by engraved lines which are filled with finely engraved cross-hatching. One of the whistles from Feature 86 bears a repeating combination of bars and small circles, the other exhibits a series of four hourglass-shaped designs (Figure 8.18, b, c). The specimen from Feature 82 is the most aesthetically sophisticated, both in terms of the quality of technical execution and the complexity of the design. The decoration consists of a series of isosceles triangles filled with engraved cross-hatching, aligned in such as way as to leave a repeating pattern of converging, bas relief parallelogram-shaped elements (Figure 8.18, a). The decorated specimen from Feature 28 is simpler in execution, the designs consisting of pairs of parallel engraved, oblique and opposing lines, in most cases filled with relatively widely spaced, short parallel lines (Figure 8.12, a).

Stylistic differences in the whistles may be chronologically significant. As noted, all Late Prehistoric/Protohistoric specimens are decorated, whereas all Early Historic ones are undecorated. Additionally, all of the Late Prehistoric/Protohistoric specimens have oval air holes, whereas only one of the Early Historic examples has an oval hole while the rest have rectangular holes. While the sample is small, it is relevant to note that prehistoric specimens from southeast Texas and adjacent Louisiana are more often than not decorated, and almost always bear oval holes (Jelks 1965:385; Gadus and Howard 1990:305; see also Figure 11.5 herein).

The single-hole bird bone whistle or flageolet appears to be a recurrent mortuary item in the Galveston Bay area and points north and northeast. The geographic limits of its occurrence will be confidently defined only by a thorough search of literature and site files for the larger Texas and Louisiana areas, a effort beyond the scope of this report. However, it is probably significant that specimens very similar to those found at Mitchell Ridge are reported from the coast and coastal plain of southeast Texas and adjacent Louisiana, suggesting a shared mortuary symbolism within what is essentially a single, broad archaeological culture area, namely the area of the Mossy Grove Tradition as delineated by Story (1990; see Chapter 3, herein), which is approximately isomorphic with the ethnohistoric distributions of western Atakapan speakers such as the Akokisa, Bidai, and perhaps the western Atakapa proper (Aten 1983a). Large bird bone whistles are reported from a Ceramic Period burial at the Harris County Boys School Site (Aten et al. 1976) and the Redtail Site, 41HR581 (Gadus and Howard 1990), and in Late Prehistoric burials as far inland as the Wiley Price and Walter Bell Sites on the lower Angelina River (Jelks 1965). Judging from the size and shape of the Angelina River specimens, they too were manufactured from whooping crane ulnae. The specimens from Harris County Boys School were believed to made from tibiae of great blue heron (Aten 1976). A series of six similar whistles was found in the early 1970s resting on the chest cavity of a flexed adult at the Miller Site (16CM30) in Cameron Parish, southwest Louisiana. All but one of these bear repeating geometric engraved line designs, similar in execution and basic layout to the decorated specimens from Mitchell Ridge (see Figure 11.6). The bones from which these whistles were fashioned were identified by Dr. Alexander Wetmore of the Smithsonian Institution as whooping crane (information and photographs of the specimens provided by Robert W. Neuman, Louisiana State University, pers. comm. 1/13/94).

The distribution of whooping crane ulna whistles may, of course, in part simply reflect the later prehistoric and early historic range of the bird, whose winter feeding grounds once extended from the central Texas coast into Louisiana (Doughty 1989). At the same time, the similar ways in which the single air holes and designs are placed suggest a culturally relevant pattern. Also, it may be significant that, to date, whistles of this kind have not been reported from south of the Galveston Bay area, even though the range of whooping cranes extended well to the south along the Texas coast. In other words, documented burials in the area of the early historic Karankawan groups may not contain this trait, at least suggesting that the whistles in fact were the product of a broadly distinct ethnic/linguistic group of the upper Texas coast and adjacent inland Texas and coastal Louisiana. The tentative nature of this suggestion is emphasized, however, in view of the dearth of professionally excavated and reported Late Prehistoric burial sites in the central coast area.

The symbolic significance of the whistles is impossible to identify, given an absence of relevant ethnohistorical references. It is perhaps significant, however, that in a number of cases the whistles appear to be closely associated with what are inferably the remains of rattles. This was the case in three burials at Mitchell Ridge: Whistles rested within a few centimeters of discrete clusters of black drum molars and/or pea-sized pebbles in Feature 28 and Burial 1 and Burial 4 in Feature 64. A similar association was documented in the cemetery at the Harris County Boys School Site (Aten et al. 1976). The recurrent presence of musical instruments in burials suggests that some importance was accorded to music as organized sound, within the context of mortuary ritual and/or within a metaphysical belief system. The exclusive use of ulnae of whooping cranes to make the whistles placed in the burials at Mitchell Ridge, at the Miller Site in Louisiana, and perhaps at other sites noted here (excepting Harris County Boys School, where the whistles were made of heron tibiae; Aten et al. 1976:37), may in itself be symbolically significant. Whooping cranes, as the largest bird inhabiting the Texas coast, must surely have impressed aboriginal people, as they do modern observers, and may have been a quintessential symbol for flight. Flight, in turn is, in many shamanistic traditions, the central metaphor for the journey of the soul from the body (Turpin n.d.), and birds tend to symbolize, cross-culturally, the soul or spirit (Cooper 1978:20-21). A symbolic significance for the use of whooping crane bones may be supported, albeit tenuously, by the

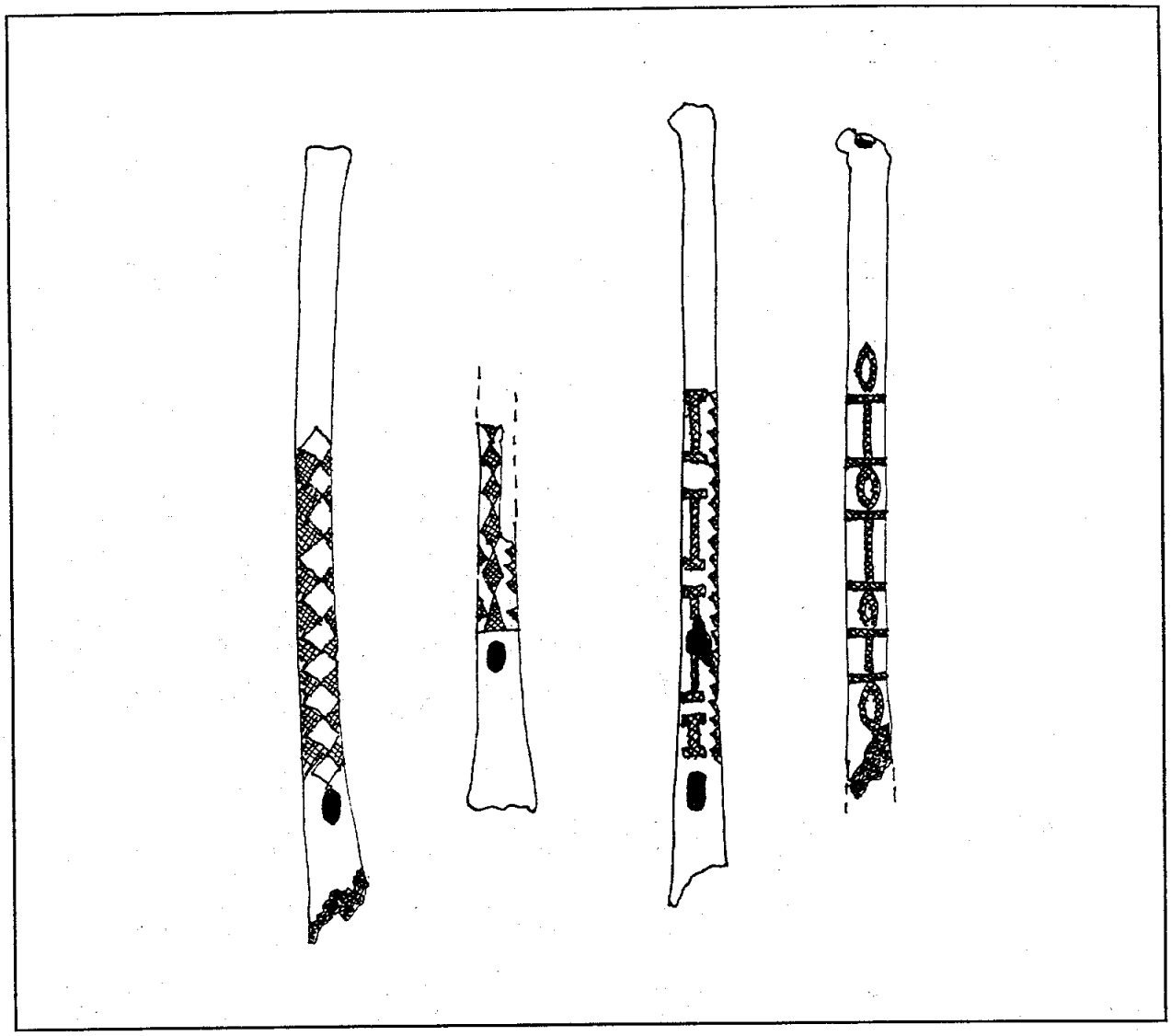

Figure 11.6. Engraved whooping crane ulna whistles from a burial in Cameron Parish, southwestern Louisiana. Drawn from photographs provided by R. W. Neuman, Louisiana State University.

fact that two whistle fragments found at Mitchell Ridge in domestic occupational debris in the Block Excavation were not made from whooping crane, but rather from the longbones (in at least 1 case, the ulna) of smaller, heron-sized birds. Thus, although not all whistles were made from whooping crane ulnae, those intended as mortuary items apparently were, more often than not. This kind of selectivity suggests a symbolic importance for the ritual use of bones of the larger, more impressive bird.

Lithics

Lithic items were occasionally placed with burials, and always consist of flaked chert tools. One or more classes of such artifacts were found with eight, or 15.7%, of the 51 individuals represented in the Mitchell Ridge burials. Two burials excavated in the 1970s contained flaked lithic grave goods; Burial 7 produced the base of a chert drill and a retouched flake, and Burial 10 contained a stemmed dart point.

Table 11.4. Lithic materials from 1992 Area 4 burials

Provenience	Description	Dimensions (mm.) L	W	T	Retouch flaking	Use wear	Munsell number	Color
Fea. 63	Prismatic blade	60.0	13.8	4.3	on 1 edge	microflaking 1 edge	2.5Y 5/3 7.5YR 4/3	variegated: light olive brown brown
Fea. 65	Chert drill?	74.5	13.7	7.8	none	none	----------	patinated
	Expanded oval base drill fragment	34.9	8.4	3.0	none	none	10R 3/3	dusky red
Fea. 65-A	Distal drill fragment	23.4	5.0	3.7	none	polish on edges	----------	blackened by fire
	Distal drill fragment	23.2	4.8	3.8	none	polish on edges	5YR 4/1	dark gray
	Distal drill fragment	22.2	5.2	3.0	none	polish on edges	7.5YR 4/2	brown
Fea. 86	Bifacial knife	86.9	34.2	6.9	none	microflaking 2 edges	10YR 4/1	dark gray
	Prismatic Blade	47.3	19.0	5.0	none	microflaking 2 edges	----------	patinated
	Prismatic Blade	55.0	25.2	9.5	none	microflaking 2 edges	----------	patinated
	Prismatic Blade	76.0	28.0	9.3	on 1 edge	microflaking 1 edge & on retouch flaking	10YR 6/2	light brownish gray
	Prismatic Blade	77.5	27.0	6.0	none	microflaking 2 edges polish on 1 edge	----------	patinated
	Retouched blade-like flake (side scraper?)	60.0	39.0	5.8	on 2 edges	microflaking on both retouched edges & 1 additional edge	----------	patinated
	Retouched blade-like flake	69.0	37.1	6.2	on 2 edges	microflaking on both retouched edges	----------	patinated
	Retouched blade-like flake	45.2	34.6	7.2	on 2 edges	microflaking 1 edge	----------	patinated
	Blade-like flake	51.1	47.9	8.2	none	microflaking 2 edges	10YR 5/1	gray
	Blade-like flake	50.7	31.3	5.2	none	microflaking 4 edges	10YR 6/2	light brownish gray
	Blade-like flake	45.3	31.1	8.2	none	microflaking 3 edges	2.5Y 4/1	dark gray-brown
	Blade-like flake	51.8	34.8	6.2	none	microflaking 4 edges	2.5Y 5/1	gray
	Biface	52.6	33.0	6.7	none	microflaking 2 edges	2.5Y 5/2	grayish brown

Table 11.4, continued.

Provenience	Description	Dimensions (mm.) L	W	T	Retouch flaking	Use wear	Munsell number	Color
Fea. 86 cont.	Utilized flake	70.0	51.2	6.2	none	microflaking 2 edges		variegated
							10YR 6/3	pale brown
							10YR4/3	weak red
	Utilized flake fragment	NA	45.4	10.8	none	microflaking 2 edges	2.5Y 4/1	dark gray-brown
Fea. 87	Drill fragment	19.0	3.5	3.0	none	none	7.5 4/2	brown
	Small crude biface	24.1	18.2	7.8	none	none	10YR 3/2	very dark grayish brown
	Crude biface	25.2	12.3	6.1	none	none	2.5Y 4/1	dark gray
	Biface fragment	26.8	14.1	9.2	none	microflaking 1 edge		variegated:
							2.5YR 6/2	pale red
							2.5YR 3/6	dark red
	Prismatic Blade fragment	NA	13.2	6.1	1 edge	microflaking 2 edges	2.5Y 5/3	light olive brown
	Retouched flake	24.7	20.1	2.9	on 1 edge	none	10YR 5/2	grayish brown
	Retouched flake	27.5	16.0	6.1	on 1 edge	microflaking 1 edge	10YR 3/2	very dark grayish brown
	Retouched flake	16.6	22.7	9.9	on 1 edge	microflaking 1 edge	10YR 4/2	dark grayish brown
	Utilized flake	20.9	17.8	6.1	none	microflaking 1 edge	2.5Y 4/1	dark gray
	Utilized flake	20.1	20.0	5.6	none	microflaking 1 edge	7.5YR 4/2	brown
	Utilized flake	20.7	23.9	6.1	none	microflaking 1 edge	7.5YR 3/2	dark brown
	Utilized flake	26.0	22.0	6.5	none	microflaking 1 edge	10YR 3/1	very dark gray
	Utilized flake	19.1	16.9	6.0	none	microflaking 1 edge	10YR 3/1	very dark gray
	Utilized flake	16.2	12.6	2.8	none	microflaking 1 edge	10YR 4/1	dark gray
	Utilized scraper-like chunk	15.8	10.8	7.0	none	on 1 edge	10YR 4/3	brown
	Primary flake	28.1	22.8	6.9	none	none	10YR 5/3	brown
	Primary flake	21.9	13.1	6.2	none	none	2.5Y 6/3	light yellowish brown

All burials excavated in 1992 with lithic offerings were in Area 4 (see Table 11.4 for list of items and summary of metric and other attributes). The Final Late Prehistoric semiflexed burial, Feature 86, contained a thin bifacial knife and 14 utilized or retouched prismatic blades and blade-like flakes. Feature 87, another semiflexed individual dating to the Final Late Prehistoric, yielded a cluster of utilized flakes, two small, crude bifaces, a fragment of a third crude biface, and the distal fragment of a chert drill or perforator. Flaked chert drills were found in apparent association with the flexed burial in Feature 65, in the secondary cremation, burial 65-A, and with the token burials in Feature 82. Finally, a utilized prismatic blade was found resting under the rib cage of the semi-flexed adult on the floor of Feature 63.

In the six cases where the age and sex of the individual could be identified (1970s Burials 7 & 10, 1992 Features 86, 87, 65, 63), lithics occurred with adult males; they were not associated with any individuals identified as either juveniles or adult females, suggesting a possible correlation with lithic tools as mortuary goods and adult male task roles. In this regard, it is relevant to note that the bifaces and utilized flakes with Features 86 and 87 may have been functional tool kits placed with the dead. It is also worth noting that, except for Burial 10 excavated in the 1970s, and a possible blunt projectile point with Feature 87, there is a dearth of projectile points in the graves.

Ochre

Traces of red ochre staining were observed on bone elements of 18 individuals at Mitchell Ridge during osteological analyses (Powell report, Chapter 9). No correlation between age or sex is apparent, but the incidence of ochre staining appears to increase with time: Among Late Prehistoric burials, staining is present on bones of 21% of the primary interments and 25% of the secondary burials, whereas for the combined Protohistoric and Early Historic burials, it is noted for 56% of the primary and 33% of the secondary interments. It should be stressed that the ochre staining of the bones is in most instances very faint, and that it did not correlate with observable ochre or staining in grave fill around the bones, suggesting that paint was applied to the bodies rather than deposited in the grave as a separate offering. As Powell has already noted, ochre stains were most frequently observed on the vertebrae and ox coxae, as well as the femur and lower arms, suggesting that paint was usually applied to the mid-section of the body.

Actual masses of ochre, in quantities clearly indicating deposition in the grave rather than painting of the body, were found in only two burials, as discussed in Chapter 8. These are the secondary token burials in Feature 82 and the primary interment of a young child in Feature 83. Both date to the Protohistoric Period between the last quarter of the sixteenth and the middle of the seventeenth centuries, on the basis of the combined radiocarbon and bead-type evidence. The red and yellow ochre (probably a solar symbol) in Feature 83 was placed on the lower abdomen, conforming to the mid-body painting suggested by staining of bone elements from other burials at the site.

Artifact Classes Among the Grave Goods: Items of Non-Aboriginal Manufacture

Glass Trade Beads

Six of the aboriginal graves excavated in Area 4 produced a total of 3,243 glass trade beads. As discussed in Chapter 8, two burials yielding glass beads, Features 82 and 83, pertain to the Protohistoric Period; the combined evidence of the type of glass bead and the calibrated radiocarbon ranges most probably place these burials between ca. A.D. 1575 and 1640-1650. The other four burial pits with glass beads, Features 62, 63, 64 and 65, contained the great bulk of the sample, 3,218 specimens. These features are identifiable as a subcluster within the burials in Area 4, by virtue of (a) their location to the south of earlier (Final Late Prehistoric and Protohistoric) burials and (b) the fact that the graves are consistently larger than earlier burial pits at Mitchell Ridge. All four have been radiocarbon dated, and all have calibrated intercept points that fall within the Early Historic Period.

European glass beads had been manufactured mainly in Venice and Murano since Medieval times, and production intensified as demand increased for trade items with the establishment and expansion of European colonial empires in the sixteenth and seventeenth centuries. As demand grew, some Venetian

craftsmen relocated operations to Holland, despite strict regulations which prohibited glass makers to leave Venice, and by the end of the seventeenth century, many colonial trading enterprises received most of their glass beads from Holland (e.g. Karklins 1983). Because the techniques by which beads were manufactured provide one of the key bases for archaeological bead typologies, these are very briefly summarized here.

Glass beads were most commonly made by two basic methods of manufacture (Kidd and Kidd 1970; Sprague 1985). The production of so-called "drawn" beads began with placing a small amount of molten glass on the end of a metal blowing tube. The glass maker then blew air through the tube, creating a hollow bubble of molten glass, after which a second worker stuck another metal rod to the bubble. The two workers then quickly moved away from each other, drawing the bubble into a long, hollow tube of glass. When cool, the rod was broken into sections according to the length of bead desired; relatively long sections produced tubular beads, short sections yielded blanks for oblong, round or "donut-shaped" beads. The rough, broken ends could then be rounded and smoothed by filling the holes with a charcoal and fine sand mixture and reheating the glass.

When only a single color of glass was used to form the initial bubble, the drawn beads which resulted were of "simple" construction. However, the addition of one or more layers of glass, generally of different color than the first, to the bubble prior to drawing out, produced multilayered beads of "compound" construction. Another option, which produced decorated beads, was to add rods of colored glass to the bubble. When the bubble was drawn, the colored rods became stripes inlaid into the surface of the bead. When the technique was applied to beads of simple construction, the resultant decoration is termed "complex". When applied to beads of compound construction, the decoration is termed "composite".

A second commonly used method of bead manufacture involved winding molten ribbons of glass around a chalk-coated iron or copper wire. The ribbon was attached to the wire, which was rapidly revolved, thus gathering up the molten wire until the desired size and shape had been attained. With this method, each bead was manufactured individually. Decoration could be achieved by applying filaments of colored glass to the surface of the wound bead when it was still molten. If the bead was removed from the wire while still in a semi-molten state, further shaping in the form of facets, knobs or ridges could be achieved by molding, pressing or pinching (Brain 1979:97).

Because different techniques of manufacture and decoration, and choices of color, changed in popularity over time, it has been possible to establish archaeological chronologies based on identifiable types and varieties of beads. In North America, such chronologies have been based on the ranges of bead types found at sites of known or strongly inferable dates of occupation (e.g. Quimby 1942, 1957; Wray and Schoff 1953; Gregory and Webb 1965; Wray 1983; Brain 1979). While samples of trade beads provide only approximate ranges for otherwise undated sites, the sequences of change in bead assemblages are sufficiently well understood for confidently placing a given sample within a reasonably accurate time frame.

Three glass bead classification systems are potentially useful for interpreting the chronological significance of the sample from Mitchell Ridge. The oldest and most widely used is that developed by Kenneth and Martha Kidd (1970), who worked mainly with bead samples from sites in the Northeast and upper Great Lakes areas. The Kidds' system classified glass beads on the basis of the three major criteria: Method of manufacture, shape, and color. Accordingly, bead classes were sorted into groups designated by Roman numerals I-IV for beads manufactured by drawing out of molten glass tubes, and by the letter W for beads made by technique of winding glass stands on a wire core. Each of these broad classes was subdivided according to the color and style of decoration by additional letter and Arabic numeral designations, so that, for example, a specific variety of bead might be classed as IVa6 according to its method of manufacture, mode of decoration, color and, in some cases, shape.

The second classification system, developed by Jeffrey P. Brain, was devised to sort the large sample of over 186,000 glass beads from the eighteenth-century Trudeau Site in the Lower Mississippi Valley (Brain 1970:96-133). Brain's system is similar to that of the Kidds', to the extent that the point of departure is the method of manufacture. As in the Kidds' approach, Brain uses Roman numerals I-IV to classify drawn beads, and the letter W for wire-wound beads. Letter designations are then affixed according to the end treatment of the bead and its construction, as follows (Brain 1979:98):

IA rough ends, simple construction
IB rough ends, complex construction
IIA rounded ends, simple construction

IIB rounded ends, complex construction
IIIA rough ends, compound construction
IIIB rough ends, composite construction
IVA rounded ends, compound construction
IVB rounded ends, composite construction

Finally, additional Arabic numeral designations are affixed according to the color and/or decorative motif of the bead. Thus, for example, a drawn white bead with rounded ends and simple construction falls into the type designation IIA2, whereas a blue-green bead with the same method of manufacture, end shape and construction is typed as IIA7, the only difference between the two being the color of the glass. The same numerical sequences are used to classify wire-wound beads, with the addition of a "W" as a prefix to the type number.

A third useful bead classification was developed by R. King Harris, using samples of glass beads primarily from historic Caddoan and Wichita Indian sites in Texas and Oklahoma (Harris and Harris 1967:129-160; see also Harris et al. 1965; Miroir et al. 1975)). Harris classified his aggregate bead sample according to attributes of size, shape, color and decoration. Each type of bead was assigned a number within a simple numerical sequence.

While all three classifications present useful and replicable breakdowns of glass trade beads, the system preferred here for sorting the glass beads from Mitchell Ridge is the one developed by Brain (1979). Brain's classification is believed to be more appropriate for interpretation of the Mitchell Ridge bead sample than that of the Kidds because (a) the bead sample on which it is based is much closer geographically (and probably historically) to the Mitchell Ridge sample than are the samples used by the Kidds, (b) Brain provides estimated date ranges and mean dates for each of his types, based upon their presence/absence as reported from numerous North American sites with known or inferable dates of occupation, and (c) Brain's classification includes types which are present at Mitchell Ridge but not contained within the Kidd classification. While Harris' classification is based on beads from sites closer to Mitchell Ridge than Brain's Trudeau Site, it is somewhat less useful because the chronological placement of bead types is based on fewer sites covering a more limited time span than is the case with Brain's typology. However, most of the bead types at Mitchell Ridge are identified in Harris' scheme which, as we shall see, does provide some comparative data useful for chronological placement of the assemblage.

The overwhelming majority of the glass beads from Mitchell Ridge-- 3,209 or 99%-- fall into types presented by Brain (1979:98-115) for the sample from the Trudeau Site, located near the confluence of the Red and Mississippi Rivers in present-day eastern Louisiana, and believed to have been occupied by the Tunica tribe between 1731 and 1764 (Brain 1988:65). These types are described here according to the order of their numerical designations assigned by Brain, along with his chronological placements (1979:98-115). The occurrences of the types at Mitchell Ridge are quantified by individual burials in Table 11.5.

IIA1 (Figure 11.6, a). These are opaque white drawn beads of simple construction. In shape, they are either round, oval (oblong) or "donut-shaped" (width greater than length). Size ranges from very small (diameter < 2 mm) to very large (diameter > 10 mm). Beads of this type from Mitchell Ridge number 235, comprising 7.2% of the total sample. Most of the Mitchell Ridge specimens are small (diameter 1-4 mm), though a few are medium (diameter 4-6 mm) or large (diameter 6-10 mm). Based on reported occurrences at many sites, Brain estimates a wide temporal range, from 1600-1836, with a mean date of 1739.

IIA5 (Figure 11.6, b). These simple drawn beads are opaque, dark burgundy in color, though they appear black in reflected light. They range in size from small to large and are either oval or donut-shaped, and perforations are 1-3 mm in diameter. The Mitchell Ridge bead sample contains 57 specimens, all from Feature 64 (Burials 1, 3 and 4). All of the Mitchell Ridge specimens are of small size and donut-shaped. Brain estimates a very wide temporal range of 1600-1890, with a mean date of 1745.

IIA6 (Figure 11.6, c). Small to large in size, these simple drawn beads are of translucent, dark blue color. Perforations range from .5-2 mm in diameter. At Trudeau, they are square, oval or donut-shaped. The Mitchell Ridge sample contains 167 specimens of this type, 144 from Feature 63 and 23 from Feature 64. The specimens from Feature 63 are large and oval in shape; those from Feature 64 are of small to medium size and donut shaped. Brain gives an estimated temporal range of 1600-1890, with a mean date of 1749.

IIA7 (Figure 11.6, d, e). These simple drawn beads are opaque turquoise or blue-green in color, and range in size from very small to very large (the large specimens found in the Protohistoric burials, F.

Table 11.5. Glass bead types from Protohistoric and Early Historic Burials at Mitchell Ridge.

Type (after Brain 1979) or description	F. 82	F. 83	F. 62	F. 63 adult male	F.63 bundle	F. 64 B. 1	F. 64 B. 2	F. 64 B. 3	F. 64 B. 4	F. 65-A	Totals	% of Total
IIA1				4	158	67		2		4	235	7.2
IIA5						27		28	2		57	1.7
IIA6				30	21	93	3		20		167	5.1
IIA7	2	22	7	161	672	1179	30	27	277	56	2,433	75.0
IIA8				8		2	7		2		19	.6
IIA15					1						1	.03
IIB1					1						1	.03
IIB3					7						7	.2
IIB10					4						4	.1
IVA2					48				184		232	6.5
IVB4				1	2						3	.09
IVB6				1	1						2	.06
IVB8					1						1	.03
WIIA10					18						18	.5
WIIIA1				9	7						16	.5
WIIIA2				2	7						9	.3
Black, 3 red, 3 white alternating stripes					2						2	.06
Flattened-end, opaque amber					8						8	.2
Oblong, dark translucent blue, 3 white stripes				1	14						15	.5
Oblong, black with 3 compound stripes					2						2	.06
Opaque light green, donut-shaped					1						1	.03
Round, opaque pale yellow				1							1	.03
Small, opaque olive green											1	.03
Small, color indeterminate						1				7	8	.2
TOTALS	2	22	7	218	976	1,369	40	57	485	67	3,243	

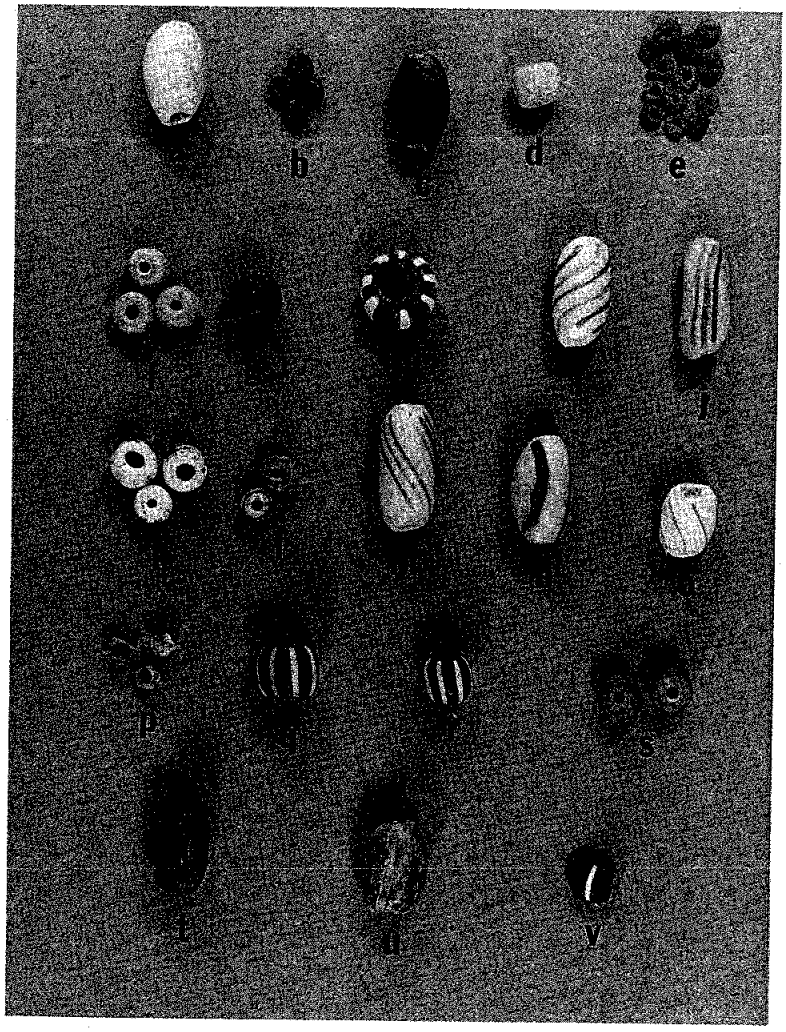

Figure 11.7. Glass trade bead types, Mitchell Ridge burials (all shown actual size). A, IIA1; b, IIA5; b, IIA6; d, e, IIA7; f, IIA8; g, IIA15; h, IIB1; i, IIB3; j, IIB10; k, IVA1; l, IVA2 (Cornaline d'Aleppo); m, IVB4; n, IVB6; o, IVB8; p, WIIA10; q, WIIIA1; r, WIIIA2; s, untyped opaque amber color; t, black opaque with three multicolored longitudinal stripes (only red remains); u, transluscent dark blue with three longitudinal white stripes; v, opaque black with three red and three white alternating stripes.

82 and F. 83, can be assigned to the so-called Ichtuknee Plain type). Shapes can be square, oval or donut-shaped. Brain's estimated temporal range is 1600-1836, with a mean date of 1737. This is by far the most common glass bead type at Mitchell Ridge, numbering 2,433 specimens and comprising 75% of the total sample. The great majority are of small size and donut-shaped. However, the 22 specimens in the necklace in Feature 83, and the 2 specimens from the grave fill in Feature 82 (both features radiocarbon dated to the Protohistoric Period), are of large size and range from slightly donut-shaped to round to oval in shape. These large specimens, as noted previously, are commonly found on late sixteenth and seventeenth century mission sites in Florida, and are estimated to appear ca. 1575 in the Southeast (M. Smith, pers. comm. 5/25/93). All specimens from Features 62, 65-A are small and donut-shaped. While the great majority of the 1,179 from Feature 63 (1162, or 98.5%) are also small and donut-shaped, 17 specimens are of medium to large size and range from donut-shaped to oval in shape.

IIA8 (Figure 11.6, f). These are simple drawn beads very similar to IIA7, the difference being that they are a light blue in color rather than blue-green. The type has a size range from small to large, with the smaller example being donut-shaped and the large ones round. Brain's temporal range estimate is 1700-1833, with a mean date of 1743. Only 19 specimens of this type were recovered from Mitchell Ridge; all are donut-shaped and of small to medium size.

IIA15 (Figure 11.6, g). These are simple drawn bead which are translucent dark green in color. At Trudeau, they range from very small to large in size; the smaller beads are donut-shaped and the larger are square or oval. The estimated temporal range (Brain 1979:103) is 1680-1890, and the mean date is 1762. The single specimen of the type from Mitchell Ridge, of medium size and donut-shaped, comes from the bundle burial in Feature 63.

IIB1 (Figure 11.6, h). This is a drawn bead of complex construction, round with flattened ends. Color is dark burgundy (black in appearance), with inlaid white stripes. At Trudeau, the small examples have four stripes, the medium have six, and the large specimens have eight. The single specimen from Mitchell Ridge, from the bundle burial in Feature 63, is large, with eight white stripes. The estimated temporal range (Brain 1979:104) is 1670-1835, and the mean date is 1743.

IIB3 (Figure 11.6, i). This type is a large to very large drawn bead of complex construction. The color is opaque white, with six longitudinal thin, blue spiral inlaid stripes. All documented specimens are oval in shape. Brain's estimated temporal range is 1699-1833, with a mean date of 1743. The seven specimens from Mitchell Ridge all came from the bundle burial in Feature 63.

IIB10 (Figure 11.6, j). This type is a drawn bead of complex construction, large in size and oval in shape. Color is bluish gray with three sets of longitudinal inlaid thin blue lines. Temporal range is estimated at 1700-1833, and the mean date is 1739. Four specimens were found at Mitchell Ridge, all in the bundle burial in Feature 63.

IVA1 (Figure 11.6, k). This is a drawn bead of compound construction, with an opaque white core covered by a layer of either opaque white or clear glass. The size range at Trudeau is small to very large, though all specimens from Mitchell Ridge are of medium size and donut-shaped. The very wide temporal range is given as 1600-1890, with a mean date of 1754.

IVA2 (Figure 11.6, l). This compound drawn bead is of small to medium size and consists of three layers of glass: An inner core of light green glass is overlaid by a layer of brick red glass, which is in turn covered by a layer of clear glass. The type is frequently referred to as "Cornaline d'Aleppo". The estimated temporal range is 1600-1836, with a mean date of 1727. This is the third most abundant type at Mitchell Ridge, represented by 232 specimens representing 7% of the total sample. These beads were found in the bundle burial in Feature 63 and with Burial 4, Feature 64.

IVB4 (Figure 11.6, m). Another compound drawn bead, this type is large and oval in shape. A bluish gray core is covered with a layer of opaque white glass, into which are inlaid three sets of longitudinal blue spiral stripes. The temporal range is given as 1680-1835, with a mean date of 1737. Three specimens were found at Mitchell Ridge, all in Feature 63.

IVB6 (Figure 11.6, n). This is a compound drawn bead in which a core of gray-white glass is covered with a layer of opaque glass. Three sets of stripes, each composed of a red stripe between two blue stripes, are inlaid longitudinally. Brain estimates the temporal range as 1699-1799, with a mean date of 1740. The two specimens of the type in the Mitchell Ridge sample were found in Feature 63.

IVB8 (Figure 11.6, o). Brain describes this type as small bead of composite construction, with a thin layer of clear glass over an opaque white core and six inlaid longitudinal red stripes. A single possible specimen was recovered at Mitchell Ridge in the bundle burial in Feature 63. This bead diverges from Brain's description in that it is of large size and the longitudinal red stripes are not straight but spiral around the bead. Also, the clear glass coating is not present, though the surface of the bead is weathered and it is thus possible that it has been worn off. The type as described by Brain is rare; only 21 specimens were noted in the Trudeau bead sample, and its presence is cited at only one other site. The dearth of data precludes an estimation of temporal range, but Brain suggests a date of ca. 1725 based on the type's presence at the Tallapoosa Site in Alabama.

WIIA10 (Figure 11.6, p). These wire-wound beads are described as medium-sized, of translucent red glass, with eight facets. Both lengths and diameters are approximately 5 mm. The estimated temporal range is 1700-1836, and the mean date is 1786. The 18 specimens from Mitchell Ridge, all from the bundle burial in Feature 63, are all approximately 4 mm in length and width, slightly smaller than the size note by Brain. However, all the Mitchell Ridge specimens have suffered surface attrition, which has clearly

reduced the overall dimensions.

WIIIA1 (Figure 11.6, q). This is a large wire-wound bead of dark green, translucent glass with eight inlaid white longitudinal stripes. The beads are round to oval in shape, with flattened ends. The estimated temporal range is 1699-1781, with a mean date of 1726. The sixteen specimens from Mitchell Ridge are all from Feature 63; nine are part of the bead necklace associated with the semiflexed adult male and seven were within the bundle burial.

WIIIA2 (Figure 11.6, r). Another large wire-wound bead, this type is very similar to WIIIA1, the only difference being that it is made from dark blue, rather than green, translucent glass. It also bears eight inlaid white longitudinal stripes. The estimated temporal range is 1714-1833, with a mean date of 1767. Nine specimens were found at Mitchell Ridge, all in Feature 63; two were in the necklace associated with the semiflexed adult male, and the other seven were in the bundle burial.

In addition to the type beads just described, 38 glass beads from Mitchell Ridge do not fall into any established types listed by Brain, Kidd and Kidd or Harris. These are listed and enumerated by provenience in Table 11.5. Eight are small, donut- shaped specimens for which the color is indeterminate (due to burning in the 7 specimens from Feature 65-A); most or all of these probably pertain to one of the small types listed above. The 30 additional specimens, are all from Feature 63. The most common is a large, oval translucent dark blue bead with three inlaid white stripes (Figure 11.6, u), represented by fifteen specimens. The next most abundant is a medium-sized bead of opaque, amber-colored glass, of which there are eight specimens, all from the bundle burial. Two specimens, both from the bundle burial, are large, oval in shape, with three stripes of different colors (Figure 11.6, t); at least one of the colors is red, but the other color(s) are indeterminate, since they have been completely removed, presumably by chemical weathering. Two medium-sized round beads are of black opaque glass and bear three red longitudinal stripes alternating with three white stripes (Figure 11.6, v). Finally, there is one each of a medium-sized, donut shaped bead of opaque light green, a medium-sized round bead of opaque pale yellow color, and a small, donut-shaped bead of opaque olive green.

The Glass Beads as Historical Time-Markers

The 3,205 typed glass beads from Features 62, 63, 64 and 65-A serve to place these burials within a fairly narrow chronological time frame. While the estimated temporal range for most of the types is wide, generally extending from the seventeenth into the nineteenth centuries, the mean dates show a marked clustering around the middle of the eighteenth century: The *average* of the mean dates for the 16 established types found at Mitchell Ridge is 1746. This is in keeping with the facts that (a) the type site for Brain's classification, Trudeau, is estimated on the basis of historical documentation to have been occupied ca. 1731-1764, and (b) the average for all 61 types at Trudeau with estimated mean dates is 1749. The fact that the historic burials at Mitchell Ridge produced bead types with nearly the same average mean date as the types at Trudeau suggests that the two bead assemblages fall into the same time period. Considering the wide estimated time range within which an individual type might have been traded, it could represent occupation in the seventeenth century into the late eighteenth or nineteenth centuries.

However, the mean date for the all the types would be considerably changed if popular types diagnostic of the seventeenth or nineteenth centuries were present, which they are not. The inference of an eighteenth century date for Features 62-65-A receives additional support from the *absence* of such types. Major seventeenth century types of widespread popularity throughout North America, not found in the Mitchell Ridge sample, include the so-called "gooseberry" beads (medium-to-large, round-to-oval grayish beads with white longitudinal stripes), the many varieties of faceted and round star or chevron beads of compound construction, and so-called "eye" beads characterized by small round colored appliqués (e.g. Quimby 1966; Smith 1983, 1987; Wray 1983). The dearth of monochrome faceted beads at Mitchell Ridge (18 specimens, 0.5% of the sample) precludes a chronological placement in the very late eighteenth or early nineteenth centuries since, by the turn of the nineteenth century, small-to-large faceted monochrome beads in a variety of colors had become very popular, and in fact dominate the assemblages at some sites (Wyckoff and Barr 1968; Baugh 1970; Good 1983). In his bead chart, Harris indicates that samples with relative abundances of faceted beads come from sites falling between 1767-1820. Similarly, Gregory and Webb (1965), in reviewing glass bead sequences in Louisiana, find that faceted beads were popular only at sites which date to the late eighteenth to early nineteenth centuries. It is also relevant to note that 11 of the 14 types at Mitchell Ridge which are indicated in Harris' bead chart are present only

Table 11.6. Bead types found at Mitchell Ridge which are listed on bead chart by R. King Harris, showing sites at which Harris identified the type and his chronological grouping of those sites.

SITES BY TIME PERIODS, AS LISTED BY HARRIS	BEAD TYPES AT MITCHELL RIDGE, AND PRESENCE (X)/ ABSENCE OF THE SAME TYPES AT SITES LISTED BY HARRIS*													
	IIA1 (1)	IIA5 (50)	IIA6 (14)	IIA7 (10)	IIA7 (46)	IIA15 (10a)	IIB3 (27)	IIB10 (23)	IVA1 (5)	IVA2 (51)	IVB4 (26)	IVB8 (28)	WIIIA1 (29)	WIIIA2 (34)
1700-1740														
Angola (Tunica)	X			X	X	X	X	X	X	X	X		X	X
Natchitoches	X	X		X	X	X		X	X	X	X			
Ft. St. Louis de Kadohadacho	X	X		X	X	X			X	X	X	X	X	
Nacogdoches	X	X	X	X	X	X		X		X	X			
Bryson Site	X	X	X	X	X	X		X	X	X	X			
Womack Site	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sanders Site (Late Group)	X		X	X	X	X		X	X				X	
1740-1767														
Pearson Site	X	X		X	X	X		X	X	X	X			
Gilbert Site	X	X	X	X	X	X			X	X	X			
1767-1820														
Vinson Site	X	X			X					X				
Stone Site		X			X					X				
Gas Plant Site		X			X					X				
Lower Tucker Site		X			X					X				
Ayers Farm		X			X					X				
Upper Tucker Site		X			X					X				

*Type designations from Brain (1979); Harris type number shown in parentheses.

at sites which Harris estimated to have been occupied between 1700 and 1767 (see Table 11.6). The three types at Mitchell Ridge which are found at Harris' post-1767 sites are particularly long-lived, but the other, earlier eighteenth century types with which they are associated give way to different types, notably the faceted beads, in the late eighteenth century.

The known historical context of European-Indian interaction in the Galveston Bay area and surrounding regions provides indirect but significant clues for fine-tuning the chronology of the Early Historic burials. Counting the bundle burial in Feature 63 as a single interment, 11 burials are represented in Features 62, 63, 64 and 65. Of these, glass beads were associated with at least eight interments (at least one of the two individuals in Feature 62, the semiflexed adult male in Feature 63, the bundle burial in Feature 63, all four burials in Feature 64, and the secondary cremation, Feature 65-A). The fact that glass beads were associated with a majority (73%) of individuals suggests that native people of the area had more than a sporadic access to European trade goods, even if only through indirect contact (i.e., via other Indian groups that acted as "middlemen" in down-the-line trade). It follows, therefore, that the burials probably postdate the beginning of the active deer skin trade in the southeastern part of the continent, which initiated ongoing and direct economic exchange between Europeans and regional native populations. As discussed in Chapter 4, the first systematic deerskin trade in Louisiana and adjacent areas was carried out by the French beginning around 1714, with the founding of New Orleans and outlying trading posts at Natchitoches and points further west along the Red River. By the 1720s, French traders were operating among the Atakapa of coastal Louisiana; by around 1740 they were making regular annual trading trips as far west as the Galveston Bay area, and the trade was sufficiently lucrative to prompt the establishment of Blancpain's post near Trinity Bay in 1754. Given these historical parameters, it can be inferred that the Early Historic burials at Mitchell Ridge were interred sometime after about 1720. If the beads were obtained from French traders, it is likely that they were traded prior to the late 1750s, since free access to trade in the area was closed to the French when the Spaniards asserted control of the region, beginning with the capture of Blancpain and the confiscation of his stock of trade goods in 1754.

It is, of course, possible that the Mitchell Ridge trade goods were obtained from Spaniards. With the official expulsion of the French traders, there was interaction between Spanish military and missionary personnel and Galveston Bay area natives, centered at the mission complex established at El Orcoquisac. However, as noted in Chapter 4, the Spanish settlement was tenuous and ultimately unsuccessful, and Spanish trade with the Indians may have been hampered by, first, a lack of provisions under control of the Spaniards, and second, by difficulties in obtaining trade goods from the relatively well-stocked French merchants at Natchitoches.

It is instructive in this regard to examine Brain's (1979:116-133) inferences concerning the national origins of the various glass bead types at Trudeau, in terms of those types also present at Mitchell Ridge. Based on historical documentations of site occupations and European-Indian relations, and correlations of temporal occurrences of bead types and known dates of supremacy of one or another European power in the Southeast, Brain suggests that the relevant bead types (those occurring at Mitchell Ridge for which there is adequate information for estimate of national origins) were obtained from traders representing the major European powers, as follows:

IIA1: French, possibly English and Spanish
IIA5: French, Spanish, English
IIA6: French, Spanish, English
IIA7: French, Spanish, English
IIA8: French
IIA15: French, English
IIB1: French, possibly English
IIB3: French
IIB10: French
IVA1: French, English, Spanish
IVA2: French, English, Spanish
IVB4: French
IVB6: Probably French
WIIIA1: French

The significant points here are that (a) all of the relevant bead types could have been obtained from French traders, (b) according to Brain's interpretations of the historical context, some of the types would have come *only* from the French, and (c) none of the types necessarily represents either Spanish or British trade. At least some of the Mitchell Ridge beads had to have been obtained via the French deerskin trade, but none had to have came from Spanish or English sources. In combination with the temporal placement of the beads, this suggests that the trade goods at Mitchell Ridge do in fact date mainly, if not entirely, to the period of systematic French trade on the upper Texas coast and adjacent areas, ca. 1720-1754. While slightly later chronological placement for the pertinent burials, and a Spanish origin for some of the trade material, cannot be entirely ruled out, the presence of what are almost certainly glass beads obtained from the French, and the dearth of very late eighteenth century bead types, suggest that the burials fall into the second or early third quarters of the eighteenth century.

A comparison of the Mitchell Ridge assemblage with the only other sizeable glass bead sample from the Galveston Bay area also may provide some degree of insight into chronology. A total of 4,351 specimens are reported from native graves exposed by borrowing operations at 41CH53, the probable site of both Blancpain's post and the subsequent Spanish Presidio de San Agustín de Ahumada (Tunnell and Ambler 1967). Tunnell and Ambler identified 17 styles of beads in the collection, several of which seem, on the basis of their descriptions, to conform to those types identified here for Mitchell Ridge. Their Styles 1, 3, and 6 (N = 1,122) are all small to medium size, of dark blue, "transparent" glass (though perhaps these would appear translucent if the specimens were large in size), and probably are the same as the type IIA6 at Trudeau and Mitchell Ridge. Small opaque burgundy beads, Style 10 (N = 91), appear black in color, conforming to type IIA5. Style 5 (N = 668), small "light blue" beads, probably fit either types IIA7 or II8A, depending on whether light blue means pale blue-green or "powder" blue (which is impossible to determine in the absence of color photographs). Style 13 (N = 376) consists of small compound beads with a pale green core, covered first by red and then clear layers of glass, definitely are of the type IVA2, the so-called Cornaline d'Aleppo beads. Finally, Style 15 beads (N = 169) are of small to medium size, compound construction, and white in color (core of white glass covered with layer of clear glass), and conform to type IVA1. Other styles, consisting of small to medium "medium blue" beads may or may not be of types found at Trudeau and Mitchell Ridge (e.g. IIA7, IIA8). Definitely not present at Mitchell Ridge are various styles of yellow, red, and clear glass.

While many of the beads from 41CH53 appear to be the same as those from Mitchell Ridge, there is one striking difference between the two assemblages: Virtually all the beads from 41CH53 are of small to medium size; none of the large types found at Trudeau and Mitchell Ridge are present, and Tunnell and Ambler note that the dearth of large decorated beads differentiates the collection from early 18th century samples (cf. Tunnell and Ambler 1967:60; Gregory and Webb 1965; Harris et al. 1965). Thus it may be that the 41CH53 assemblage is slightly later in time than that from Mitchell Ridge, perhaps falling into the period between the founding of Blancpain's post in 1754 and the end of Spanish occupation with the closing of the mission/presidio complex in 1771. If the absence of the large bead types at 41CH53 is in fact chronologically significant, and if the burials from which the beads came were in fact contemporaneous with the Spanish settlement of the site, then the Mitchell Ridge sample may fall somewhat earlier in time, perhaps mainly in the second quarter of the eighteenth century.

However, considering the possibility that the 41CH53 sample may not be fully representative of the kind of beads available at the time, and taking into account that existing bead chronologies are only approximations of historical reality, such inferences should be viewed with caution. Until better control is achieved on bead sequences in the upper coast region, it is probably advisable to conclude only that the Mitchell Ridge beads fall within the period of ca. 1720-1770, and that the typological data tend to support a placement in the period of French domination of the regional deerskin trade in the earlier three and one-half decades of that time range.

Other Trade Items

Aside from the glass beads, nine items of non-aboriginal origin, all obtainable via the deerskin trade, were found in the Early Historic burials. A small brass flush-edge bell, probably worn around the neck, was found with Burial 2, Feature 64, the extended remains of a child. The other eight items were found in the grave fill of Feature 65 and within the secondary cremation, Feature 65-A. As previously noted, several heavily corroded iron objects were present in Feature 65, including a spike or spike fragment

placed near the head of the semi-flexed adult male, and fragments of unidentifiable iron tools and three hand-wrought square nails in the fill over that skeleton, probably placed within the pit as associated offerings. A corroded iron spike fragment and a piece of heavily oxidized, flat clear glass, probably a mirror fragment, were with the lens of ash-stained fill and cremated human bone fragments which comprised Feature 65-A. These items have all been described above, under the appropriate feature descriptions. The point to be made here is that, as a group, they represent the kinds of European trade materials expectable on an eighteenth century aboriginal site.

Brass flush-edge bells are widely distributed on seventeenth, eighteenth, and early nineteenth century sites throughout North America (Brown 1979:201), and most have little diagnostic value as a time marker or indicators of national origin. However, the specimen from Mitchell Ridge best fits the description provided by Brown (1979:203-204) for the Bayou variety of flush-edge bells, which appears on the basis of available evidence to fall into the period of French-dominated trade in the early decades of the eighteenth century. The variety is identified on the basis of (a) two holes in the bottom connected by a fairly wide slit, (b) a smooth surface on which the soldered seam connecting the upper and lower hemispheres is almost imperceptible, and (c) a circular loop of sheet brass which is soldered onto the top of the bell (as opposed to the two ends of the loop being inserted into holes as is the case with the more common flushloop variety). All of these are attributes of the Mitchell Ridge specimen. Brown (1979:204) cites occurrences of the variety at sites in the Lower Mississippi Valley region which date to the first third of the eighteenth century (Fatherland, ca. 1699-1730; Angola Farm, 1700-1731; Bayou Goula, early eighteenth century). The bell from Feature 64 probably represents French trade, in keeping with the inferences drawn from the collection of glass beads from Mitchell Ridge.

The small collection of iron artifacts from Feature 65 essentially serves only to indicate that iron tools and implements were available to the native occupants of the site. Spikes, nails, knives and other tools of iron are common items in eighteenth century assemblages of trade material in Louisiana and Texas, as elsewhere (e.g. Quimby 1966; Brain 1979; Blaine 1993). However, the materials in the Mitchell Ridge graves represent a narrow range of the kinds of European tools known to have been available through trade (e.g., Blancpain's list of goods in Table 2, herein) and documented at other eighteenth century sites (e.g. Brain 1979; M. Smith 1987; Blaine 1993), where items including, but not limited to, knives, hoes, axes, picks, iron kettles and gun parts have been found in burials and occupation areas.

The limited range of trade goods in the Mitchell Ridge burials may indicate that the site's occupants had not yet obtained access to the full range of goods already available to native peoples further east in the first half of the eighteenth century (Brain 1979; Smith 1987). If this were in fact the case, the abundance of glass beads relative to other kinds of European goods would be expectable since, in general, ornamental objects were the first class of trade goods to be obtained in abundance upon the initiation of trade relations in any given region of North America (e.g. Wray and Schoff 1953; Ritchie 1954; Quimby 1966; Smith 1987). As a general rule, a wide range of domestic tools and weapons became common only as trade intensified and became increasingly systematic.

Alternatively, the limited representation of European tools in at Mitchell Ridge may simply reflect a sampling bias, since we have only a small number of graves of the relevant time period; a larger sample of burials of the period may well have yielded a greater variety of such goods. However, it is perhaps relevant that the combined collections from excavations in occupation areas in the 1970s and in 1992 produced only a small collection of bottle glass fragments which can confidently by attributed to the Early Historic aboriginal occupation of the site. Despite the extensive nature of the excavations, domestic tool forms clearly diagnostic of the period are not present in the collections. Particularly notable is the complete absence of gun parts and gunflints, which are often relatively abundant items in occupation areas at sites in Texas dating to the eighteenth century (e.g. Kenmotsu 1992; Blaine 1993). Inferably, then, (a) Excavations within occupation areas failed to locate concentrations of Early Historic debris, or (b)Early Historic occupation at Mitchell Ridge was not particularly intensive. Considering the small extent of the excavations relative to the size of the site, the former possibility should be considered, and any future research at the site should involve careful search for identifiable Early Historic occupation components.