

## CHAPTER THREE

PERSONAL ADORNMENT AND THE MATERIALITY OF SOCIAL MEMORY:  
AN EXAMINATION OF THE SHELL ORNAMENTS FROM SALMON PUEBLO,  
NEW MEXICO

Located on the north bank of the San Juan River 72 km north of Chaco Canyon, Salmon Pueblo occupies a significant place in the Middle San Juan region within the greater context of Chacoan regional dynamics in the Late Pueblo II (AD 900-1100) and Pueblo III (AD 1100-1300) periods (Figure 3.1). The great house, which rivals the size of great houses within Chaco Canyon, was constructed around AD 1090 with three stories and 275-300 rooms, as well as a Tower Kiva and Great Kiva (P. Reed 2006a). Substantial modification occurred during a secondary occupation between AD 1125 and 1280, with the subdivision of rooms and construction of more than 20 small roomblock kivas. These changes might correspond to a shift in population from the original Chaco inhabitants to a reoccupation by a local San Juan group (P. Reed 2006a).

The Ancestral Puebloans who occupied Salmon Pueblo continued to emulate Chaco characteristics and symbols of prestige, especially through the possession and ritual deposition of shell ornaments. The importance of shell craft production and exchange of finished bracelets and beads throughout the American Southwest indicates a reliance on this exchange network (Bennyhoff and Hughes 1987; Bradley 1993, 2008; Earle 2001; Mathien 2001; McGuire and Howard 1987). In the present study, I examine the shell ornament assemblage from Salmon Pueblo through taxonomic and stylistic

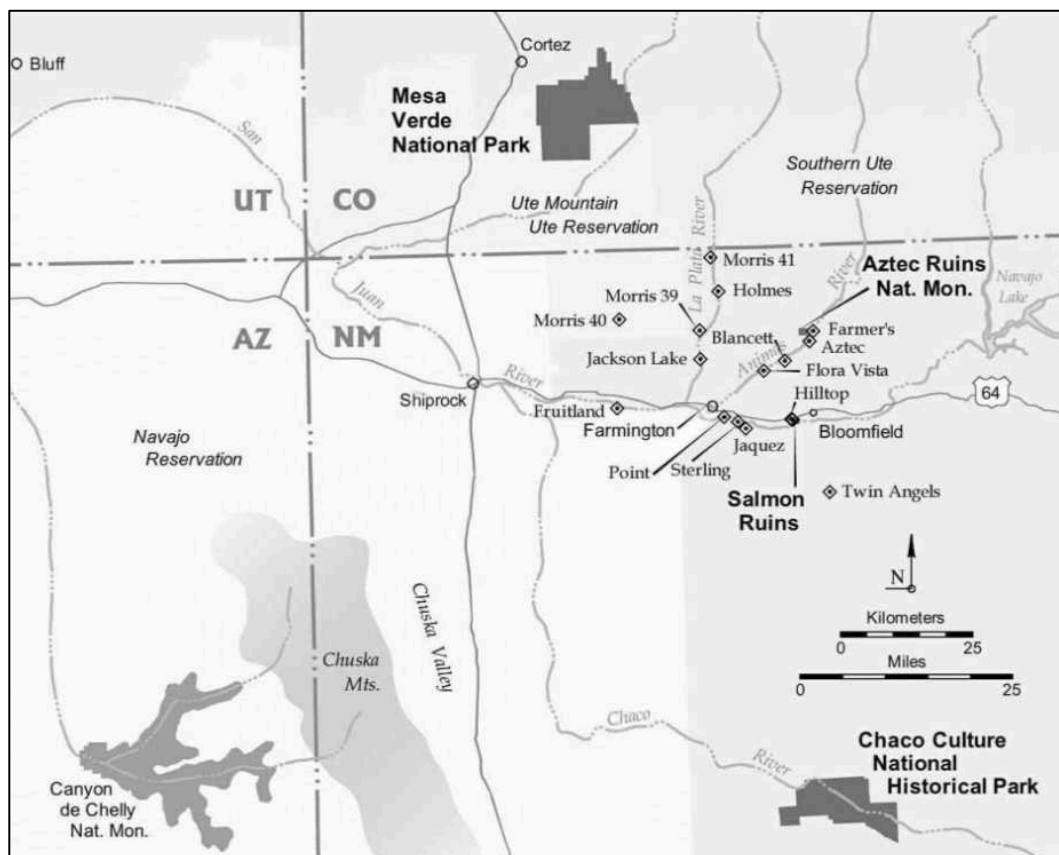


Figure 3.1. Map of the Middle San Juan region in New Mexico showing the location of Salmon Pueblo (Ruins) relative to Chaco Canyon. (Brown et al. 2013:419)

identification in order to better understand the economic, social, and ceremonial practices of the inhabitants of this Chaco outlier. Utilizing data from the Salmon Pueblo Archaeological Research Collection (SPARC), I evaluate the spatial distribution of the shell ornaments to gain insights on the ceremonial and personal use of shell at Salmon Pueblo. Participation in the deliberate creation of a Chacoan locale at outliers may be enabled by a memory-dependent exchange of objects embedded with high social value (Van Dyke 2004, 2009). With this in mind, I consider how the possession and ritual deposition of shell ornaments at Salmon Pueblo might inform our understanding of social

transformations in the Middle San Juan prior to and following large-scale changes in Chaco Canyon.

### **Background: The Chaco Phenomenon**

Regional developments in the San Juan Basin at the start of the Early Bonito Phase (c. AD 850) ushered in a set of cultural values and practices that came to be shared within an 80,000 km<sup>2</sup> (31,000 mi<sup>2</sup>) wide region (Cordell and McBrinn 2012:185). The Chaco Canyon core area was central to this development, an area that stretches along the Chaco Wash in the form of a dozen great house sites consisting of great kivas, enclosed plazas, multi-storied architecture, imported exotic items, formalized roadways, and roughly 200 small house structures (Heitman 2007:250). Over 230 Chacoan outlier communities existed in northwest New Mexico and portions of Utah, Arizona, and Colorado, stretching as far as 150 miles to the north and south (Van Dyke et al. 2016). Although some outliers were founded after the initial settlement of Chaco Canyon, many were also local developments in which pre-existing communities later chose to emulate certain Chaco-esque qualities.

Such a widespread set of shared values has led many scholars to question the role of outlier communities in both their local settings and as part of the larger “Chaco Phenomenon.” The earliest models suggest a system of redistribution in which outliers supported the great houses of Chaco Canyon with ample resources, which were then stockpiled and distributed to other communities as needed (Judge 1979). In this model, the roads existed to bring outside resources into the canyon, such as timber and agricultural products, with outlying communities deliberately placed in particular areas in

order to assist in this resource acquisition. Others have suggested Chaco and its network of outliers facilitated political competition between elites. Kantner (1995) argues competition between leaders led to the rise of outliers in the periphery. In this model, aspiring leaders created specialized architecture, such as great houses and great kivas, in order to enhance their prestige and authority and play an active role in facilitating ideological legitimation and exchange.

Alternatively, a symbolic/interactive model of Chaco developments stresses the intensification of ceremonialism as closely tied to the function of great kivas. Although many great kivas were established prior to great houses, they might have first functioned to promote social cooperation and facilitate relationships between communities (Potter 1992:35). The development of the great house enhanced the function of the great kiva as a means to obtain and maintain social power within and between local communities. Kantner and Vaughn (2012) argue Chaco Canyon was a place of pilgrimage for people coming from distant places, a journey operating as a costly signal and thus imbued with deep religious and social meaning. This model presents a regional system of linked communities and leaders who used these forms of specialized architecture to acquire local prestige through control of ceremonial participation.

These conflicting explanations attempt to address the conditions that might have led to the expansion of Chaco and the maintenance of social power by dominant leaders. Outliers may not have been adhering to a centralized Chacoan identity, but rather deliberately choosing aspects of Chacoan social trends to emulate, thus creating a locale that is inherently tied to the local landscape. Individuals depended upon a memory of Chaco Canyon and great house construction to create these outlying communities. Van

Dyke (2004; 2009) argues the changing architectural styles of the Late Bonito phase were a result of the need for new ways to legitimate authority. Despite these social transformations, great house leaders still maintained social memories of a past situated within a ritually important landscape.

Despite the numerous explanations offered to account for the establishment and role of outlying communities, long-distance exchange of prestige goods was an important activity both in Chaco Canyon and its outliers. Exotic goods were prized and considered objects of high value, often serving as symbols of prestige and attainment of power due to their low availability and restricted circulation (Bradley 1993). In the Southwest these include bison hides from the Plains, copper bells and macaws from Mexico, and marine shell from the south Pacific coast of California, the Gulf of California, and the Gulf of Mexico. Examination of these trade items has been particularly useful in understanding the role of great houses in Chaco Canyon and the emulation of a Chacoan identity in outlier communities (Earle 2001; Hull et al. 2014; Mattson 2016a). Following these studies and others (Bradley 2008; McGuire and Howard 1987; Riley 1975) I examine the frequency and spatial distribution of shell ornaments from Salmon Pueblo in order to better understand its role as an outlying great house in the Middle San Juan prior to large-scale population reorganization that occurs in Chaco Canyon in the Pueblo III period.

### **Salmon Pueblo: A Chaco Outlier**

The great house at Salmon Pueblo was originally constructed in an E-shaped layout, which was unprecedented in the Middle San Juan, although the form has antecedents at Chetro Ketl and Hungo Pavi in Chaco Canyon (Brown et al. 2013:424).

For this reason, and due to the presence of other Chacoan characteristics like core-and-veneer masonry, Salmon Pueblo is thought to have been constructed by a group of migrants from Chaco (Brown et al. 2013; P. Reed 2011). Rooms were organized as a series of roomblocks, where large rooms facing the plaza led to a series of smaller rooms and incorporated the second and third stories (Brown et al. 2013:425). Rectangular and T-shaped doorways connected these rooms, and the latter were more common as entryways east of the Tower Kiva.

Tree-ring dates indicate the Tower Kiva (Room 64W) was built around AD 1090 as part of the primary construction episode (Figure 3.2). Located in the center of the great house, the Tower Kiva was constructed on a platform three meters above the surface in order to raise the floor to the second-story level (P. Reed 2006a:150). This structure measures 8.5 meters in diameter above the bench, and contained a number of features including a hearth, floor vault, sipapu, vent shaft, pilasters, and a painted mural dating to the San Juan occupation. Spread across much of the Tower Kiva were the cremated remains of numerous individuals. The death of these individuals corresponds to the catastrophic fire that destroyed much of the great house close to its abandonment in AD 1280. The majority of the remains consist of children under 11 years of age, estimated at a total of 21 individuals (Akins 2008:156). According to Bergschneider (1996), the remains of deceased individuals were placed atop the roof and cremated for ceremonial purposes. Akins (2008:161) notes that the cremation was not a direct result of the burning of the great house, but rather a ceremonial activity following the catastrophic event. The intensity of the fire resulted in the preservation of charred remains of cordage, basketry, matting, and sandals, as well as numerous botanical items including prickly pear pads,

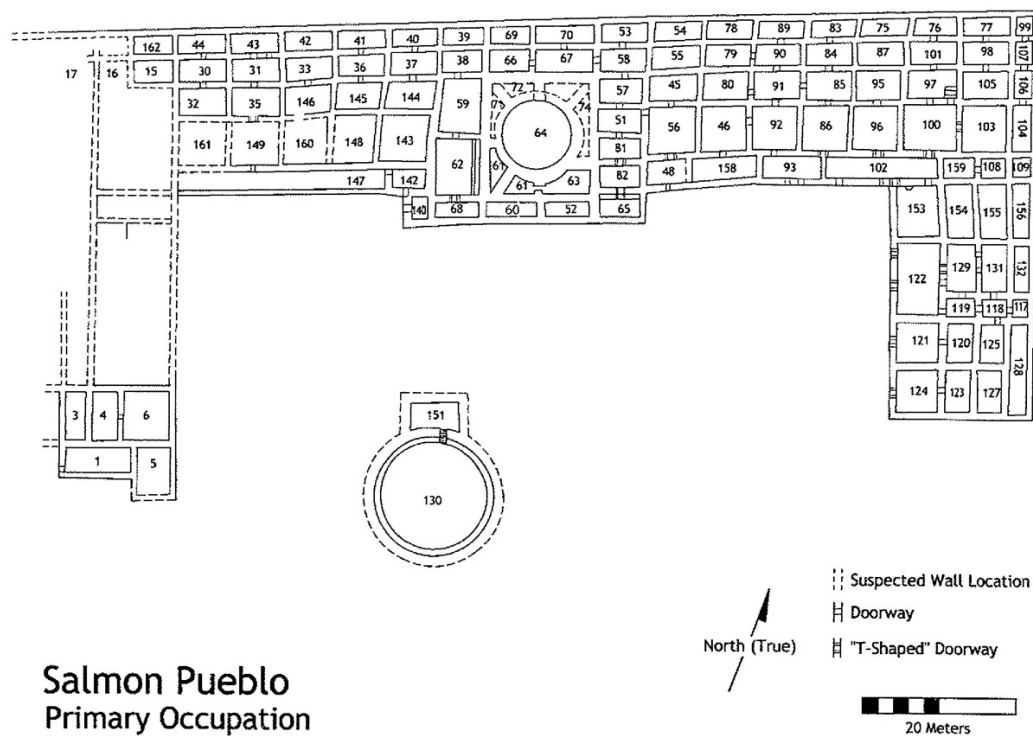


Figure 3.2. Map of Salmon Pueblo's Chacoan (Primary) occupation. (P. Reed 2006b:Figure 1.2)

piñon nuts, chollah buds, and squash, which indicates the kiva burned shortly after the fall harvest (P. Reed 2006a:149-153).

The Great Kiva (Room 130W) was constructed in the plaza area around AD 1090, around the same time as the Tower Kiva. Its interior diameter measures 14.5 meters, and it includes an encircling bench, foot drums, wall niches, and an antechamber connected via a stairway. Near the floor vaults were more than 70 burned impressed corn cobs, which may represent "corn mothers," one of the most powerful and sacred Puebloan effigies (Heitman 2016:477-478; P. Reed 2006a). Substantial modification occurred during the San Juan occupation, including alterations to the interior masonry, improvement of structural support, and a replacement of the roof in AD 1263 (P. Reed

2006a:230). The Great Kiva burned along with the Tower Kiva and the rest of the great house at the time of abandonment in AD 1280.

The construction of Chacoan-style masonry ceased around AD 1120 and modification occurred around this time with the addition of more than 20 kivas to the rectangular Chacoan rooms, the subdivision of many other rooms by newly constructed walls, and the sealing of a number of doorways (Figure 3.3). Significant changes within Chaco Canyon were also occurring between AD 1130 and 1180, a period that signaled the end of great house construction in the canyon and the beginning of large-scale reorganization of the regional system (Mills 2002:75). Coinciding with the shift in architectural styles at Salmon Pueblo and changes in Chaco Canyon were the beginning stages of construction at Aztec East, which along with Aztec West, saw continued Chacoan masonry through the 1200s. Located on the Animas River 10 km from Salmon Pueblo, these great house complexes at Aztec Ruins quickly became the centers of power and wealth in the Middle San Juan. Irwin-Williams (2006) has suggested that widespread drought resulted in stress that caused the Chacoans at Salmon Pueblo to migrate to Aztec Ruins. However, P. Reed (2006c) suggests the Chacoans left Salmon Pueblo upon the realization that the great house was constructed too close to the San Juan River making it susceptible to periodic flooding. Nevertheless, some chose to remain at Salmon Pueblo following the out-migration of the Ancestral Puebloans, and were joined by other local residents who occupied the great house until it was destroyed by fire in AD 1280.

Preliminary excavation of Salmon Pueblo began in 1970 and continued through 1978, resulting in excavation of approximately 30% of the site and recovery of 1.5 million artifacts (P. Reed 2006d:53). Researchers have examined many of the extensive



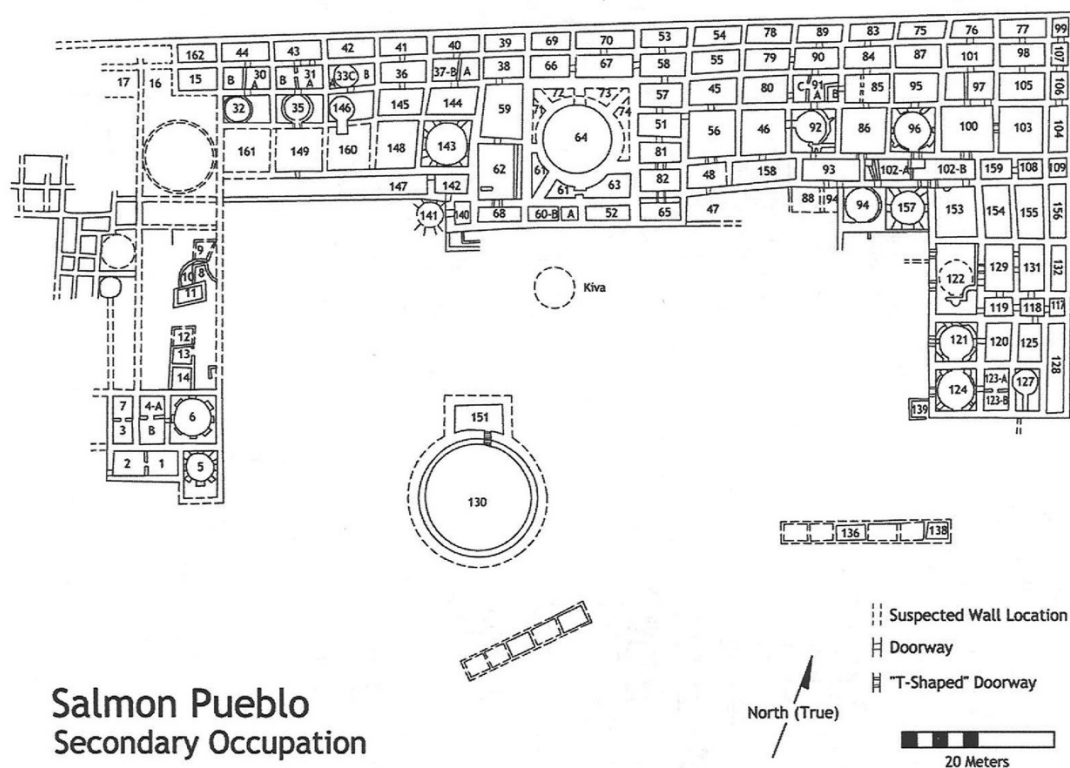


Figure 3.3. Map of Salmon Pueblo's San Juan (Secondary) occupation. (P. Reed 2006b:Figure 1.3)

artifact assemblages recovered from Salmon Pueblo. These include research on ceramics (Franklin 2006; L. Reed 2006; Washburn and Reed 2011), botanical remains (K. Adams 2006; K. Adams 2008), perishable artifacts (Webster 2006; Webster 2008), lithics (Shelley 2006), and faunal remains (Durand and Durand 2008; McCaffery et al. 2014).

A Master's thesis (McNeil 1986) on the ornament assemblage from Salmon Pueblo included the shell artifacts in a preliminary way. McNeil's study evaluated 2,633 ornaments and ornament related objects, 633 of which are ornaments (1986:72). The number of ornaments from the San Juan period is much larger than the earlier Chacoan period (McNeil 1986:38). His results indicate that turquoise, gypsum, and shell were

most abundant, and that most beads were manufactured from bone and shell. Two turquoise tadpole/frog effigies from Salmon Pueblo are identical in form to those at Aztec Ruins and Pueblo Bonito (McNeil 1986:Figure 3). Lack of specialized tools, ornament blanks, and manufacturing debitage indicate an ornament workshop was not present at Salmon Pueblo (McNeil 1986:39). While McNeil's research on the ornament assemblage is extensive, he did not provide a list of ornaments by material, stylistic type, count, or provenience. For this reason, my research contributes to a more holistic understanding of adornment and ceremonial practice involving shell ornamentation at Salmon Pueblo and within the larger context of Middle San Juan studies.

### **Shell Exchange in the Prehispanic Southwest**

A long history of marine shell exchange characterizes the Southwest since at least the Basketmaker II period (1500 BC – AD 500), and worked shell has appeared in the Great Basin since the early Holocene (Vokes and Gregory 2007:319). AMS radiocarbon dates produced from eleven *Olivella biplicata* shell beads from cave and rockshelter sites in the Great Basin indicates exchange occurred with California coastal populations since at least 10,300-10,000 cal. yBP (Fitzgerald et al. 2005). Shell material in the form of beads and pendants recovered from Early Agricultural period (1500 BC – AD 200) contexts in the Tucson Basin of Arizona indicates pre-ceramic marine shell exploitation (Vokes 1987). The Hohokam were the primary manufacturers of shell ornaments, especially *Glycymeris* bracelets and *Olivella dama* beads. Finished products were exported to distant places, including Chaco Canyon, the Mimbres region, and Casas Grandes. The concentration of shell specimens (96% of the total assemblage) in two large

storage rooms at Casas Grandes points to the accumulation of shell as a resource for individuals of high prestige or as items being stored for future exchange (Bradley 1993:128).

The acquisition of marine shells required regular inter-group exchange across long distances. Shell exchange was intimately linked to trade of other goods such as buffalo hides and other buffalo products, turquoise, corn, and textiles. Smith and Fauvelle (2015) suggest regular interaction was sustained through the exchange of ceramics and textiles from the Southwest for shell beads and asphaltum from coastal California. The millions of beads produced by the Chumash of the Northern Channel Islands were passed on to groups along the Pacific coast, and Mojave traders then carried them across the desert to Puebloan groups and onto Chaco for redistribution. Evidence for such a relationship exists at 43 interior and 7 coastal sites in California where Southwest ceramics have been recovered (Smith and Fauvelle 2015:716).

Identification of the particular trade routes that supported marine shell exchange was a question posed by Brand (1938). With the limited assemblage of marine shell retained from excavations of Ancestral Puebloan sites available for analysis, Brand identified two main trade routes: a southern route from the Sonoran coast of the Gulf of California and a Pacific route from the California coast (1938:9). Expanding on Brand's work along with other researchers (Bennyhoff and Hughes 1987; Jernigan 1978), Vokes and Gregory (2007) have identified a significant number of possible networks linking Puebloan groups to the coast. Five southern routes carried products from the Gulf of California, northwest Mexico, and Mesoamerica, including macaws, marine shell, and

copper bells (Vokes and Gregory 207:319). Four Pacific coast routes may have supported the import of marine shell and assisted in the procurement of turquoise.

Intensification of trade relationships throughout the Southwest facilitated the emergence of a prestige-driven system of exchange centered on major political and economic centers, including Chaco Canyon and Casas Grandes. Formalized networks of roads that radiate from canyon great houses to distant communities facilitated the movement of people and goods. Chacoan roads took a variety of forms, as some were less formalized, and others were cut into bedrock or formed by removing dirt and lined with masonry curbs. Some of the wider, more formalized roads emanated directly from the canyon, such as the North Road and South Road (Cordell and McBrinn 2012:195-6; Van Dyke et al. 2016:52). The variability in road construction and direction suggests they served multiple purposes. Some led to locations of valuable resources, including timber and Narbona Pass chert from the Chuska Mountains, while others led directly to outlying great houses, including Salmon Pueblo (Cameron 2001; Cordell and McBrinn 2012:197). Important to Ancestral Puebloans, and a sentiment shared with descendant communities today, is their physical and cosmological place on the landscape and association of communities with symbolically valued landscape features. The North Road may thus represent a symbolic link to the traditional place of emergence from a sipapu in the distant San Juan Mountains, a belief valued at Acoma (Van Dyke et al. 2016:53). The South Road extends to the prominent landmark of Hosta Butte, thus symbolically placing Chaco Canyon at the center of intersecting roads that lead to important places, while at the same time linking distant communities through trade.

### **Shell Ornamentation, Identity, and Social Meaning**

Anthropological considerations of identity are often ambiguous because identity can refer to individuality or it might signify collective group membership (Barnard and Spencer 1996:262). As a result of this ambiguity, little attention has been given to defining identity and the ways in which we might see its material correlates in the archaeological record (Fisher and Loren 2003:225). Díaz-Andreu and Lucy (2005:1) understand identity as “individuals’ identification with broader groups on the basis of differences socially sanctioned as significant.” This definition is useful in anthropological studies because it emphasizes personal choice and also understands identity as active participation within a larger group.

Practices of personal adornment and identity are interrelated because the former is a material expression of the latter. Personal adornment enables individualistic expression, differentiation from others, communication of a social role, reinforcement of social values, and political symbolic expression (Mayer et al. 2017; Roach and Eicher 1973). Ornamentation is one form of personal adornment that was practiced in the American Southwest and which may have functioned to differentiate individuals or groups from others. Shell ornamentation itself was not a signifier of a Chacoan identity because use of shell for purposes of personal adornment was common throughout the prehispanic Southwest. However, some differences in ornament styles are good visual indicators of group identity (Jernigan 1978; Mattson 2016a). In the Hohokam area, zoomorphic shell ornaments depicting snakes and highly elaborate shell bracelets were popular, whereas Ancestral Puebloan assemblages show preference for geometric forms (Jernigan 1978: 153-154). A great deal of regional variation in ornament styles characterized the

Mogollon area (Jernigan 1978:93-94). Nevertheless, all three areas show similarities in some zoomorphic representations of ornaments, especially in the depiction of frogs or tadpoles and birds, and they all favored similar varieties of beads, including whole shell *Olivella* and bilobed shell beads (Jernigan 1978).

Although possession of shell ornaments might not have signified belonging to a certain group, they often served as material indicators of social status (Bradley 1993, 2008) or were employed as ceremonial offerings (Heitman 2007, 2015; Mills 2008). One way in which we might interpret the discard of shell ornaments in particular contexts is through the recognition of alternative discard pathways, a concept explored by Mills (2002, 2004) and others (Walker and Lucero 2000). Through this type of disposal, valuable objects entered the archaeological record in places other than ordinary middens, thereby operating to promote social identity (Mills 2004). While shell ornaments themselves were not identifiers of group belonging, the decision to deposit these items within certain contexts might have signified deliberate association with a certain group. Shell may be related to an association with Chacoan identity through its placement within specifically Chacoan contexts, such as placement within kiva pilasters (Heitman 2007, 2011, 2015; Mills 2008). Examining the contexts within which shell was placed is one step towards understanding the possibilities of identity practices in the past.

Similar practices of shell use and deposition at great house and small house sites within Chaco Canyon and beyond reflects a shared understanding of the value of shell in Ancestral Puebloan communities and the role of shell ornamentation in maintaining a complex ideological network. The complex meanings associated with the value of shell are multidimensional. The archaeological and ethnographic record suggests the value of

shell has been manifested in numerous ways, serving as a component of prestige-driven exchange, possessing considerable cosmological and symbolic importance, and functioning to support ceremonial activities. Ethnographic examples of shell ornamentation and use by Native groups, including the Navajo, Hopi, and Zuni, point to the continuation of these values in descendant communities in the more recent past. Experimental archaeological research involving the production of shell beads (Curcija 2018) and the examination of use-wear on shell ornaments in ethnographic collections (Falci et al. 2018) have also contributed to our understanding of bodily adornment.

#### *Prestige-Driven Exchange*

An exchange network centered on socially valued items facilitated the acquisition of shell for ornamentation and other purposes. According to Bradley (1993:131), a prestige economy is one that involved a multilayered organization between elites – those whose acquisition and control of high value objects further enhanced their status and prestige – and their less prestigious subordinates. Chacoan elites considered ornaments as objects of prestige partly due to the specialized knowledge, skill, and technology that was required to manufacture them. Exotic material, like marine shell, carried special social and ideological value due to its restricted geographic nature. The trade of prestige goods, especially turquoise, has been studied extensively in order to understand the practices of ornamentation at great house and small house sites in Chaco Canyon (Mathien 1993, 1997, 2001, 2003; Toll 1991). Prior to AD 1020/50, larger quantities of turquoise appeared at great house sites within the canyon than in outlying communities, suggesting communities within Chaco Canyon controlled its distribution (Mathien 1993:45).

Additionally, the development of a more formalized road network in the period between AD 1040 and 1120 suggests unification of an exchange network that included communities within Chaco Canyon as the centers of control (Mathien 1993:45). The Great North Road linking northern great houses like Salmon Pueblo and Aztec Ruins, as well as the surrounding smaller sites like Twin Angels, integrated these Middle San Juan communities into a controlled network of exchange.

The same formalized exchange centered on turquoise and other important commodities also incorporated the movement of marine shell. The distribution of shell ornaments at great houses is similar to that of turquoise. In a study of artifact distributions in rectangular rooms at Pueblo Bonito, Neitzel (2003:110) found that shell was only second to turquoise in frequency, and while both materials were scattered across many rooms in the great house, their distribution was quite concentrated within certain rooms. Like other prestige objects – jet, fossil shell, ceremonial sticks, cylinder vessels, and pipes – shell and turquoise were most highly concentrated within the north-central burial group (Neitzel 2003). Evidence for shell workshops at Chacoan great houses is limited, although Room 40 at Pueblo Bonito is one possibility, which contained a large stone slab and many shell beads and turquoise fragments (Mathien 2003:130; Pepper 1920:199-200).

In an extensive summary of the ornaments recovered from the Chaco Project excavations (1971-1978), Mathien (1997) reports on the quantities of ornaments at sites within the canyon. From AD 900-1050, artifacts of turquoise and shell were distributed throughout fill and floors of rooms, kivas, and plazas, and a greater number of shell species is represented compared to pre-AD 900 contexts (Mathien 1997:1162-1163).



During the period between AD 1020 and 1220, sites within Chaco Canyon featured an increasing number of ornaments produced from a wider variety of shell species (Mathien 1997:1166-1170). Compared to small outlier sites in other parts of the San Juan Basin, ornaments were more abundant within Chaco Canyon. The Sterling Site (occupied between AD 950 and 1100), located only five miles upstream from Salmon Pueblo, contained very few ornaments, none of which were particularly remarkable (Mathien 1997:1182-1183). Only one shell ornament was reported for Twin Angels, a structure located on the Great North Road in Kutz Canyon, New Mexico that consisted of 17 rooms and two kivas (Mathien 1997:1184).

Aztec Ruins, located 50 km north of Chaco Canyon and 10 miles north of Salmon Pueblo, was also an outlier in the sense that it contained ornaments in quantities comparable to great houses within Chaco. Excavations of Aztec West Ruin by Morris between 1919 and 1928 revealed a great house with an estimated 405 rooms and 28 kivas. Morris established an occupation sequence similar to Salmon Pueblo, with an initial Chacoan period between AD 1110 and 1120 and a second and final San Juan occupation in the mid AD 1200s (1919:106). Mattson (2015; 2016a) examined the ornaments from Aztec West Ruin, finding that like Pueblo Bonito, shale ornaments dominated the assemblage (75%), followed by shell (9%), and turquoise (6%) (Mattson 2016a:132). Ornaments from Aztec West include a variety of bead, pendant, and other forms, including several turquoise frog/tadpole composite beads, which have also been recovered from Pueblo Bonito and Salmon Pueblo (Mattson 2016a:132). Notably, the majority (95%) of the ornament assemblage from Aztec West is concentrated within mortuary contexts. Although total numbers of shell ornaments were not provided, shell

appeared in multiple contexts at Aztec West and was distributed throughout the great house in a fashion similar to Pueblo Bonito.

### *Ceremonial Value of Shell*

As demonstrated in the distribution of finished shell ornaments at Chacoan great houses and smaller sites, shell might have served as material indicators of social status. However, the social value of shell ornaments was not strictly economic, and shell did not always function to promote individual wealth. Marine shell in the form of manufacturing debris, unfinished blanks, and finished ornaments was deposited as objects of memory meant to promote community identity (Mills 2002:90). Finished shell products at Ancestral Puebloan sites have been recovered in great abundance as ceremonial offerings, where they were deposited in architectural contexts as offerings tied to the ceremonial dedication of a particular structure. Shell was placed in niches, shrines, and within kivas as deposits beneath pilasters, on benches, or embedded in the roof (Heitman 2015; Mathien 2001). Great Kiva II at Chetro Ketl provides one of the best examples of the dedication and termination of a ritual structure in Chaco Canyon. Thousands of beads produced from shell and other material, as well as many pieces of turquoise, were deposited within the sealed wall niches, consisting of pendants and strands of beads ranging between two and five meters in length (Mills 2008:88-90). The Great Kiva I was constructed atop this earlier structure in the mid-1000s, and resulted in the deposit of numerous other ornaments as part of the closing ceremony of the old structure and dedication of the new one (Mills 2008:91). Similarly, the Great Kiva at Aztec West Ruin consisted of worked turquoise and shell beads associated with the dedication of the

structure, as well as ornaments tied to termination and renewal activities, including a strand of *Olivella* shell beads (Mattson 2016a; Mills 2008:92). The ceremonial sealing of valuable objects within kivas as occurred in Chaco Canyon were activities that outlying communities deployed, signaling participation in a ritual network centered on Chaco Canyon.

Shell was often associated with turquoise, which appeared together in burials and as pilaster offerings within kivas (Akins 2003; Heitman 2015; Mathien 2001). The burial of 14 individuals within Room 33 at Pueblo Bonito in Chaco Canyon contained more than 30,000 objects, with the majority (>95%) of these made of turquoise, jet, and shell, in addition to two cylinder jars, wooden ceremonial sticks, and nine flutes (Plog and Heitman 2010:19622). The objects manufactured from shell included beads, pendants, two cylindrical baskets adorned with turquoise and shell mosaic, and a *Strombus* sp. shell trumpet (Mathien 2001; Mills and Ferguson 2008; Plog and Heitman 2010). The association of shell with these high value objects points to the perceived high status of the individuals buried in Room 33 and reflects the restricted circulation of finished marine shell objects. The act of depositing marine shell as part of the suite of socially powerful objects thus established a physical link to the ancestral past through which elites legitimized their connection to “apical ancestors” (Plog and Heitman 2010).

Although shell ornaments were distributed widely throughout great houses, including in structured trash deposits and middens (Mathien 1997, 2003; Mattson 2016b), they were often concentrated within elite burial and ritual contexts. The value attributed to shell ornaments, partly due to their exotic origins and high-quality craftsmanship, resulted in their perceived social value as ritually powerful objects. In addition to

accompanying a high-status individual during interment, shell ornaments served as ideologically complex citations to Chacoan leadership and cosmology. Based on the compiled evidence, this pattern of shell distribution is expected across great house sites within Chaco Canyon and in outlying great houses, including Salmon Pueblo.

### *Ethnographic Observations*

Information gleaned from ethnographic observations of Puebloan life may be employed to assess archaeological expectations for Ancestral Puebloan sites. Spielmann (2005) characterizes the use of ethnographic analogy for interpreting the archaeological record as an “either-or” approach that has historically been taken by Southwest scholars. Further problematic is the tendency for archaeologists to favor western Pueblos over eastern Pueblo ethnography for interpretation of sites, which is directly correlated to the lack of ethnographic information for eastern Pueblos (Heitman 2011:85-86; Spielmann 2005:199). Nevertheless, the work of ethnographers has greatly contributed to our knowledge of the social dynamics of Southwestern groups. A number of ethnographic observations regarding shell ornamentation are especially worthy of mention and may reflect continuities with the past regarding the perceived value of shell (See Heitman 2011).

Multiple ethnographic examples cite the use of shell beads as the appropriate monetary correlates in certain transactions, especially in exchanges involving textiles. Frisbie (1975) cites numerous examples of transactions employing strands of shell beads, which he calls “hishi,” a Keresan word for “white shell.” The use and production of “hishi” is known at many pueblos, including Zuni, Cochiti, Santo Domingo, and San

Felipe (Frisbie 1975:123-124). According to Elsie Clews Parsons (1939:36), a Navajo blanket could be purchased at Cochiti with shell beads more cheaply than with American paper money. She also notes that shell “is ‘paid’ today to the Spirits” (1939:36). In another example, Beaglehole (1937:84) reports that a single string of shell beads was exchanged for two cotton blankets at Hopi.

In addition to possessing monetary value, shell was revered for its cosmological and symbolic associations, which is extensively communicated in the oral tradition of many Native groups. The source of authority and power for Pueblo groups comes from proximity to points of origin (Heitman 2011:97), and shell is often cited prominently in origin stories. White Shell Woman is a deity central to creation stories of Native groups including the Zuni and Navajo. She is often considered the same being as Changing Woman, whose home is in the west where the Sun retires for the evening, and “wherever among the towns she has bathed, she has left rubbings from her body, white *olivella* shells” (Parsons 1939:196). Shell is worn not only by humans, but also by supernatural beings, as Hill (1947:43) notes “the dwellers in the Land of Spirits wear innumerable beautiful necklaces and bracelets of turquoise and white shell.” Marine shell was intimately linked to Chacoan cosmology, and different species of shell have symbolic color and directional associations. At Santa Clara pueblo, Harrington (1916:44) reports that abalone is the shell of the west, large white bivalves are the shells of the east, and *Olivella* and cowrie shells are of the south. The Navajo also equate abalone shell with the west, and with the color yellow (Lamphere 1969:287; Reichard 1945:215).

Shells are employed as components of offerings and take central roles in ceremonial practice. The Zuni produce a ground corn, turquoise, and shell mixture that

serves as a sacred meal used in offerings to supernatural beings (Hill 1947:44). This practice is also cited by Tyler (1979:5), who states that when shell, symbolic of water, and turquoise, symbolic of the sky, are combined with cornmeal, “all the essentials of life are brought together.” Shell is used in a myriad of ceremonial activities, including for “Rain chief prayer-sticks, to deposit under a new house, to sprinkle and ‘save yourself’ if you break a continence rule, or as an offering for deer or for eagle” (Parsons 1939:296). Given these ethnographic observations, Native groups living in the Southwest have valued shell as items employed in exchange and for its cosmological, directional, and color associations, perhaps in ways similar to Ancestral Puebloan groups in the past.

### **Methods**

This research on shell ornaments from Salmon Pueblo involves the analysis of both the physical characteristics of the shell objects and their temporal and spatial distribution across the great house. I analyzed the taxonomic and stylistic attributes of the shell at the Salmon Ruins Museum in Bloomfield, New Mexico, where all shell specimens are located either on display or in a curation facility. I measured the objects (width, length, diameter; 0.1 mm) with a Mitutoyo digital caliper and recorded the following qualitative attributes when applicable: ornament type, shape, condition, type/count of perforation(s), species, manufacturing technique (grinding, drilling, punching), and presence of polishing. Arthur Vokes, Archaeological Repository Curator at the Arizona State Museum, assisted with taxonomic identification using a Dino-Lite handheld digital microscope with a tabletop stand, and noted additional characteristics related to wear or manufacture. I follow Keen’s (1971) taxonomic guide *Sea Shells of*

*Tropical West America* for genera and species nomenclature, aside from some necessary adjustments in order to reflect the most accepted terminology as identified by the Encyclopedia of Life and the World Register of Marine Species (WoRMS). The Salmon Pueblo Archaeological Research Collection (SPARC) supplies information on the spatial distribution of shell in the form of downloadable tabular data and field records. In addition, my analyses were supplemented by site reports and edited volumes on the results of excavation at Salmon Pueblo (P. Reed 2006e).

Some issues occurred during analysis of the shell. These obstacles will be discussed below. The SPARC (2018a) Artifact-Ornament database lists 136 unique museum specimen numbers, which are comprised of 153 total shell objects classified as “bead,” “pendant,” or “other.” Additionally, two shell ornaments are included in the Select Artifact table (SPARC 2018b), and thus were assigned SA numbers, bringing the total to 155 shell objects listed in SPARC. Only two of these shell ornaments listed in the database have unknown provenience information, likely due to loss of information during excavation.

While at the Salmon Ruins Museum, I was able to locate only 96 unique museum specimen numbers (representing 136 shell objects) out of the 136 unique museum specimen numbers (153 shell objects) listed in the SPARC database. Additional shell items were located in museum exhibit cases, many of which had unreadable labels or no label at all. Many of the shell ornaments in the exhibit cases, totaling 135 objects, were labeled with a different museum specimen number scheme (A through Z) that did not correlate with the museum specimen numbers in SPARC. The total number of shell objects I located at the museum is 271, which is the number of specimens I was able to

analyze taxonomically and stylistically. However, the total number of shell objects with known provenience information (including those I could locate and those I could not) totals 166. This number (166) differs from the 155 total shell objects listed in SPARC for three reasons. First, shell ornaments were miscounted in the field or during later artifact processing, resulting in incorrect totals represented in SPARC. Second, some shell beads were misidentified in field records as bone or calcite, and thus incorrectly listed in SPARC. Finally, some objects listed in SPARC were not assigned a material type, but upon locating them at the museum I was able to identify as shell. Appendix A provides a master list that combines all shell objects listed in SPARC, including those I could not locate at the museum, in addition to all shell objects I located and analyzed. Thus, the total number of shell objects listed in Appendix A is 318. Appendix B includes only the shell objects I was able to locate and analyze for taxonomic and stylistic purposes: 271 total shell objects.

The data tables contained within SPARC were created as inventories of what was recovered through excavation or were created by research specialists. The following description provides information as to how SPARC's Artifact–Ornament table was created:

The Ornaments table is an analysis table that derives from the original Salmon San Juan Valley Archaeological Program in the 1970s. It was subsequently updated during the Salmon Ruins Museum inventory work in the 1980s. It includes data on artifacts identified as ornaments. As part of the SPARC project (2015-2018), the table has been edited and data within has been cross-checked against other sources. [SPARC 2018c]



Explanations for the discrepancies between the SPARC database and the number of shell objects I actually located in the museum are manifold. Many incongruities likely resulted from errors produced in field records during the 1970s excavations. Identification of material type for very small beads is sometimes nearly impossible without a microscope. As a result, beads manufactured from shell were mistaken for calcite or bone during excavation, and therefore they were incorrectly recorded in field records. In one example, the Feature Record (Select Artifact) form for Select Artifact 130W081 documents three calcite beads that were recovered from Feature 30, the east foot drum of the Great Kiva (SPARC 2018d). However, upon locating these objects at the museum, I discovered that one is actually a shell (*Laevicardium* sp.) bilobed bead. The misclassification of beads during excavation is a likely explanation for the discrepancies between the shell ornament count in SPARC and what I actually encountered upon analysis of the artifacts in the museum.

#### *Methods for Shell Identification*

For the purpose of this study, I define ornament as any type of jewelry or object outfitted for adornment, whether related to everyday wear or ceremonial costuming. Ornaments may be either decorated (etched, painted, inlaid, etc.) or undecorated, with no additional alterations other than having been worked into a shape or perforated. While an object may be classified as an ornament on the basis of its typology, it might have functioned for a purpose other than adornment, as discussed previously (i.e. dedicatory offering, money, burial goods). Thus, I base stylistic classification solely on typology and

do not intend to assign particular functions to these ornaments by nature of their classification.

For stylistic classification I follow Jernigan's (1978) guide to *Jewelry of the Prehistoric Southwest* and Milliken and Schwitalla's (2012) *Olivella* shell bead guide, a revision of Bennyhoff and Hughes' (1987) typology. Pendants are manufactured in such a way that the outward facing perforation permits suspension of the object and allows for maximum visibility of the surface. Some scholars have chosen to lump *Conus* tinklers with whole shell pendants (Haury 1945:149), while others place them in their own category in order to emphasize their unique usage as idiophones (Nelson 1991). Presently, I classify tinklers as pendants based solely on their morphology. Beads are generally smaller than pendants and visibility of the perforation is more restricted when strung, so that the sides adjacent to the perforation are the most visible portions. Bracelets are ornaments that feature an opening large enough to fit around the wrist. Finally, characteristics generally associated with a mosaic piece include lack of perforation, ground edges, and a shape flat enough to permit adhesion to another surface.

### **Taxonomic Identification**

The shell assemblage from Salmon Pueblo represents ornaments manufactured from at least 11 marine and one freshwater genera (Table 3.1). Thirteen shell specimens are terrestrial or freshwater species, including 10 that are local land snails and appeared culturally unmodified. The marine shell derives from the Gulf of California (n=91) and the Pacific coast of California (n=11). The species or genus for 11 additional shell ornaments are endemic to both of these marine provinces. Each of these areas produce

Table 3.1. Shell species recovered from the 1970s excavations of Salmon Pueblo.

<b>Species</b>	<b>Count</b>	<b>Province</b>	<b>Common Name</b>
Marine species			
<i>cf. Anomia peruviana</i>	1	Gulf of California and California coast	Peruvian jingle
<i>Columbella</i> sp.	1	Gulf of California	Dove shell
<i>Conasprella ximenes</i>	1	Gulf of California	Cone snail
<i>Glycymeris</i> sp.	8	Gulf of California	Bittersweet
<i>gigantea</i>	1	Gulf of California	Giant bittersweet
<i>Haliotis</i> sp.	2	California coast	Abalone
<i>rufescens</i>	1	California coast	Red abalone
<i>cf. cracherodii</i>	1	California coast	Black abalone
<i>Laevicardium</i> sp.	5	Gulf of California and California coast	Egg cockle
<i>Lottia scutum</i>	1	California coast	Plate limpet
<i>Olivella</i> sp.	3	Gulf of California and California coast	Dwarf olive
<i>biplicata</i>	3	California coast	Purple dwarf olive
<i>cf. biplicata</i>	3	California coast	Purple dwarf olive
<i>dama</i>	71	Gulf of California	Dama dwarf olive
<i>cf. dama</i>	8	Gulf of California	Dama dwarf olive
<i>Pteria</i> or <i>Pinctada</i> sp.	1	Gulf of California and California coast	Wing oyster/Pearl oyster
<i>Turritella leucostoma</i>	1	Gulf of California	Turret-shell
<i>Vermetidae</i> sp.	1	Gulf of California and California coast	Worm snail
Unidentified marine	133	-	-
Freshwater species			
<i>Anodonta californiensis</i>	3	Western North America	California floater
<i>Helisoma</i> sp.	1	Local	Rams-horn snail
<i>Sonorella</i> or <i>Helisoma</i> sp.	2	Local	Talus or rams-horn snail
Terrestrial species			
<i>Succinea</i> sp.	7	Local	Amber snail
Unknown	12	-	-
<b>Total</b>	<b>271</b>		

distinctive shell species that, in many cases, can be identified even once significantly reduced by manufacturing procedures. Identification is more difficult for smaller ornaments, such as disc beads. For this reason, the species of 133 shell ornaments could not be determined, although they are all certainly marine based on observations of certain characteristics for each specimen. The remaining 12 ornaments were manufactured from an unknown species or genus and it is uncertain whether they are marine or land specimens.

#### *Terrestrial and Freshwater Shell Species*

A handful of terrestrial and freshwater specimens (n=10), including those belonging to the *Succinea*, *Helisoma*, and *Sonorella* genera, are incidental to the assemblage, as these are endemic to the wet, vegetated habitat of the local area. None of the ten specimens from Salmon Pueblo were culturally modified, other than one *Succinea* specimen that appeared burned. These were introduced into site features through cultural activities occurring near aquatic environments. The only other freshwater species included in the Salmon Pueblo ornament assemblage is *Anodonta californiensis*, which is common along rivers in Western North America and especially the Salt and Gila rivers in Arizona, where it may have served dual purposes as both a local food resource and raw material for artisans (Vokes 2006:11.4). This species is represented by two pendants and two fragments that may have once represented a single pendant.

#### *Gulf of California Species*

Most shells (at least 91 specimens) from Salmon Pueblo derive from the

warmer, more tropical environment of the Gulf of California, representing a wide range of genera. *Glycymeris* is one of the most common genera found in Hohokam sites (Nelson 1991:18) and is represented by nine specimens from Salmon Pueblo deriving from both Chacoan and San Juan period contexts. *Glycymeris* is a genus of saltwater clams found in warm, shallow waters or on sandy substrates along the Gulf of California and can be collected by dredging or diving (Guía-Ramírez 2009). These large shells were fashioned into bracelets and pendants (Brand 1938; Vokes and Gregory 2007; Smith and Fauvelle 2015). *Glycymeris* shell bracelets were common between Basketmaker III and Pueblo III periods, although virtually none appear following Pueblo III (Vokes and Gregory 2007:336).

Four other genera are represented in the shell assemblage whose origin may be positively identified as the Gulf of California. *Turritella leucostoma*, a gastropod with a slender shape, is found at Hohokam sites as whole shell pendants (Nelson 1991:18; Vokes 1984:485). The *Turritella* specimen in the Salmon assemblage is a single fragment recovered from a Chacoan period occupation layer. *Conus* shells are common at Hohokam and Ancestral Puebloan sites and their use as tinklers was restricted to post AD 1150 (Nelson 1991:55). A *Conasprella ximenes* (formerly *Conus ximens* or *Ximeniconus*) tinkler was recovered from a later San Juan occupation layer at Salmon Pueblo. A single specimen belonging to the *Columbella* genus is a whole shell bead dating to the San Juan occupation of Salmon Pueblo.

The shell species most abundantly represented in the assemblage, totaling 79 beads, is *Olivella dama* (dwarf olive). This univalve is sourced from the Gulf of California, and is especially common throughout the Hohokam system, at Casas Grandes

in Mexico, and Ancestral Puebloan sites (Nelson 1991; Vokes and Gregory 2007).

Spire-lopped beads manufactured from this species are widely distributed, and barrel, cylindrical, and truncated beads were also formed of this type, which were restricted to the Pueblo II and III contexts (Vokes and Gregory 2007:336).

#### *Pacific Coast of California Species*

At least 11 shell ornaments from Salmon Pueblo derive from the Pacific coast of California. *Olivella biplicata* is the purple dwarf olive species present at Salmon Pueblo in a more limited quantity of six shells and is likewise present in temporal contexts spanning the entire length of site occupation. *O. biplicata* is distinct from the *O. dama* species due to its restriction to the colder waters of the Pacific coast where they were valued by California coastal populations. The high quantity of *Olivella* shells, including the *O. dama* variety from the Gulf of California, from Salmon Pueblo are not surprising, as these are also the most numerous shells recovered from the Chaco Project excavations (Mathien 1997:1142).

Other varieties of marine shell exclusive to California's Pacific coastal waters were recovered from Salmon Pueblo, including a single *Lottia scutum* (plate limpet) ring bead and four *Haliotis* sp. (abalone) ornaments. California coastal populations frequently exchanged abalone with Great Basin inhabitants and Ancestral Puebloan traders (Vokes 2006:11.3). In addition to disc beads and tab pendants, these nacreous mollusks could be etched or carved into zoomorphic effigy figures. The abalone ornaments present at Salmon Pueblo include two mosaic tesserae from Chacoan period contexts and two

pendants from an unknown occupation period of the site, whereas the *Lottia scutum* specimen was recovered from a San Juan period context.

#### *Other Marine Shell Species*

At least 144 additional shell ornaments are a marine variety, including one nacreous, three unknown *Olivella* species beads, and four other genera that are endemic to both the Gulf of California and California Pacific coast provinces. This includes a single *Anomia peruviana* (Peruvian jingle) pendant, five *Laevicardium* sp. ornaments, a *Pteria/Pinctada* sp. (wing oyster/pearl oyster) pendant, and a *Vermetidae* sp. bead. The presence of marine shell from both provinces indicates extensive trading relationships were well-established, with shell traded through the Hohokam system and possibly with Great Basin traders who obtained finished beads from California coastal populations (Bennyhoff and Hughes 1987; Smith and Fauvelle 2015).

#### **Stylistic Classification**

In a comprehensive guide on jewelry throughout the prehispanic Southwest, Jernigan (1978) identifies a range of ornament styles and their spatial and temporal distributions. Shell pendants take a variety of shapes, including tab, round, geometric, and effigy forms. A number of shell beads were popular during the Pueblo II and III periods, including disc, tabular, bilobed, and saucer beads (Jernigan 1978:157). A wide variety of ornament types are likewise represented in the Salmon Pueblo shell ornament assemblage, including 244 beads, 13 pendants, 2 bracelets, and 2 mosaic tesserae (Table

3.2). The absence of any manufacturing debris suggests all shell ornaments were imported as finished products.

### *Beads*

Salmon Pueblo's shell ornament assemblage is overwhelmingly dominated by beads (n= 244) in both whole shell and cut varieties (Figures 3.4, 3.5). The only whole shell beads are manufactured from *Olivella* shells, while the cut beads are produced from at least five marine genera. Cut beads include nine distinct stylistic types, including barrel, cap, disc, bilobed, end-ground, ring, saucer, split drilled, and tubular.

*Whole Shell Beads.* The manufacturers of *Olivella* whole shell beads removed the shell's apex by either punching or grinding. Removal of the apex allows a cord to pass through the natural aperture at the other end. These spire-lopped forms account for a total of 64 beads in the assemblage and include both *O. dama* and *O. biplicata* examples (Figure 3.5:f). Many of these are highly faceted on three sides, an effect produced as a result of intense polishing. On some of the specimens, the opening of the removed apex, the outer lip, and the spire notch all exhibit heavy wear. In some cases, the broken outer lip of beads appears to have been subsequently repaired through grinding, thereby smoothing the break. The distribution of whole shell *Olivella* beads at Salmon Pueblo indicates they were popular throughout the entire occupation sequence.

*Cut Shell Beads.* Cut beads exhibit some form of alteration that significantly reduces the integrity of the natural form of the shell. The majority of the assemblage



Table 3.2. Shell types from Salmon Pueblo, organized by species.

Species	Bead										Pendant					Other			Total
	Barrel	Bilobed	Cap	Disc	End-Ground	Ring	Saucer	Split Drilled	Tubular	Whole Shell	Cut shell	Whole Shell	Tinkler	Bracelet/Pen.	Unmodified	Bracelet	Mosaic	Unmodified	
Marine species	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>cf. Anomia peruviana</i>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
<i>Columbella</i> sp.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
<i>Conasprella ximenes</i>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
<i>Glycymeris</i> sp.	-	5	-	-	-	-	-	-	-	-	-	-	-	1	-	2	-	-	8
<i>gigantea</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
<i>Haliotis</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	2
<i>rufescens</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
<i>cf. cracherodii</i>	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
<i>Laevicardium</i> sp.	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
<i>Lottia scutum</i>	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
<i>Olivella</i> sp.	-	-	-	-	-	-	1	-	-	2	-	-	-	-	-	-	-	-	3
<i>biplicata</i>	1	-	-	-	-	-	2	1	-	2	-	-	-	-	-	-	-	-	6
<i>dama</i>	12	-	1	-	7	-	-	-	-	59	-	-	-	-	-	-	-	-	79
<i>Pteria</i> or <i>Pinctada</i> sp.	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
<i>Turritella leucostoma</i>	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
<i>Vermetidae</i> sp.	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Unidentified marine shell	-	14	-	118	-	-	-	-	-	-	1	-	-	-	-	-	-	-	133
Freshwater/Terrestrial species	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Anodonta californiensis</i>	-	-	-	-	-	-	-	-	-	-	2	-	-	-	1	-	-	-	3
<i>Helisoma</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
<i>Sonorella</i> or <i>Helisoma</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
<i>Succinea</i> sp.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	7
Unknown	-	11	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	12
<b>Total</b>	<b>13</b>	<b>35</b>	<b>1</b>	<b>118</b>	<b>7</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>64</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>10</b>	<b>271</b>

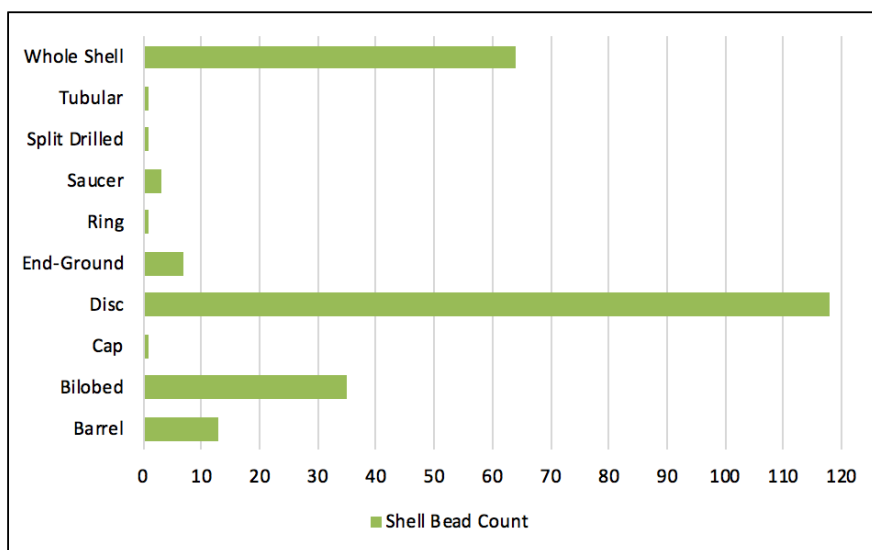


Figure 3.4. Count of shell beads from Salmon Pueblo.

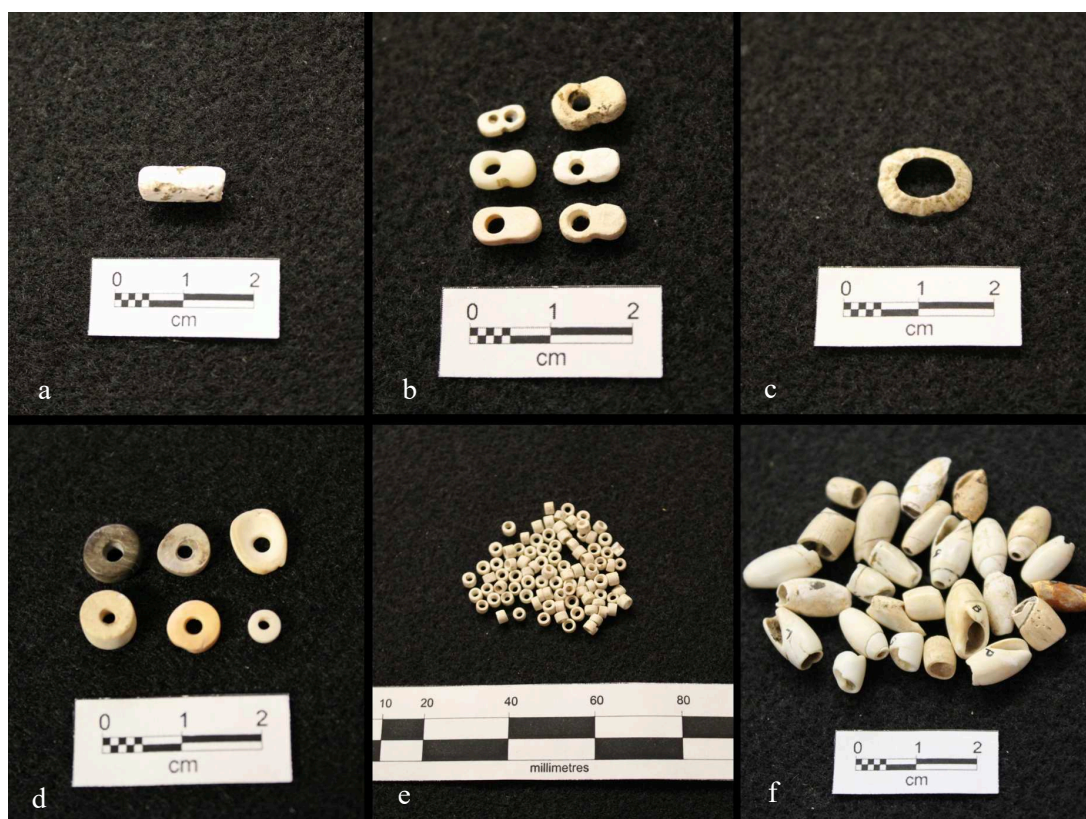


Figure 3.5. Examples of shell beads from Salmon Pueblo: a. *Vermetidae* sp. tubular bead (SRM Catalog No. 347), b. bilobed beads (SRM Catalog Nos. 148, 152, 353, 359, 360, 361), c. a *Lottia scutum* ring bead (SRM Catalog No. 274), d. disc and saucer beads (SRM Catalog Nos. 102, 192, 348, 416, 1051), e. disc beads (SRM Catalog No. unknown), and f. *Olivella* whole shell, barrel, and cap beads (SRM Catalog No. A through Z). Courtesy of the Salmon Ruins Museum. Photos by Jade Robison.

features cut forms and includes nine identifiable stylistic types. The genera with the greatest variety of cut forms present in the assemblage are *Olivella* shells. Some cut beads formed from *Olivella* specimens feature a removed spire and a reduction to the canal end, while still retaining some attributes of the natural form. The 13 barrel beads, including at least one *O. biplicata* and 12 *O. dama* examples, exhibit slightly more reduction to the spire and base than do the seven end-ground beads. The single example of a cap bead, a result of the removal of both the spire and the entire aperture, is the only other shell ornament represented by Milliken and Schwitalla's (2012) Class B group. The other examples of cut forms produced from *Olivella* shells include a single *O. biplicata* Class C Split Drilled bead and three Class G Saucers (Figure 3.5:d). The split drilled example features a centrally drilled perforation, and exhibits some wear polish, a portion of the shelf, and smoothed edges. The saucer beads were manufactured from the shell wall and feature relatively large central perforations and ground edges. The single *O. biplicata* type G5 Oval Saucer exhibits a high degree of wear polish on two opposing sides of the perforation, a pattern characteristic of beads that have been sewn onto clothing (Arthur Vokes 2018, personal communication). It is difficult to ascertain any interpretation of temporal distribution of these cut forms, as the majority are from unknown contexts (n = 13). However, many of these beads with known provenience derive from the San Juan and Mixed Chacoan and San Juan occupation contexts (five specimens each), with only two barrel beads associated with the Chacoan period.

Disc beads are the most numerous of the cut forms, accounting for 118 specimens, and are so significantly reduced from the original form that taxonomic identification further than marine shell is impossible (Figure 3.5:e). Temporal distribution

of the disc beads from Salmon Pueblo is unknown. Although larger disc beads were popular since Basketmaker II, these very small forms were not common until Pueblo II (Jernigan 1978:156-157). The examples from Salmon Pueblo exhibit biconically drilled perforations, although one specimen features a perforation that appears to have been uniconically drilled.

Similarly, bilobed beads did not appear in Chaco Canyon until Pueblo II (Jernigan 1978:156). Bilobed forms are represented by 35 specimens from Salmon Pueblo, manufactured from both *Glycymeris* sp. and *Laevicardium* sp., as well as some unidentified shell genera (Figure 3.5:b). All but one of these were recovered from post-Chacoan occupation contexts at Salmon Pueblo, distributed in San Juan or mixed Chacoan and San Juan period assemblages. The single Chacoan period bead is particularly unique, exhibiting the typical perforation in addition to a drilled perforation at the other end that was never finished.

Two distinctive cut bead forms are the tubular bead (Figure 3.5:a) and the ring bead (Figure 3.5:c). Tubular beads of shale were produced almost exclusively in Basketmaker II, and were later produced from hematite, turquoise, and jet in the Pueblo periods, but those manufactured from shell appeared in Chaco Canyon no earlier than Pueblo II (Jernigan 1978). The example from Salmon Pueblo, recovered from the earlier Chacoan occupation, is manufactured from a *Vermetidae* sp. worm snail, whose natural shape lends itself to minimal modification required to produce a tubular shaped bead. A form requiring greater modification is the oval-shaped ring bead, represented by a single *Lottia scutum* specimen. This Pacific coastal species bead features a central perforation and was recovered from a San Juan period context.

## *Pendants*

The shell ornament assemblage from Salmon Pueblo includes 13 pendants (Figure 3.6): seven cut shell, two bracelets that were broken and reshaped into pendants, one whole shell, one unmodified, one tinkler, and one unknown form. The shell pendant with an unknown form consists of two small fragments of *Anodonta californiensis* that exhibit fresh breaks along the edges and appear to be unworked fragments. Nevertheless, due to the wide use of this shell species as pendants, these fragments likely represent small pieces of what was once a single cut shell pendant.

*Unmodified and Whole Shell Pendants.* A *Haliotis rufescens* (red abalone) pendant, from an unknown context at Salmon Pueblo, is an example of an unmodified pendant in the assemblage (Figure 3.7). The form of this pendant is quite unique as it is a culturally unmodified fragment of a red abalone shell with edges that have been naturally smoothed by the ocean. The perforation is a result of boring by a worm or predatory marine mollusk, although the wear pattern associated with its natural perforation is suggestive of its cultural use as a pendant. The only other example of a whole shell pendant is a *Turritella leucostoma* fragment, which was recovered from a Chacoan period context. It is difficult to confirm whether a *Turritella* fragment is unworked or part of a pendant unless the perforation is present. Although this specimen is fragmentary and missing any indication of a perforation, the lack of unmodified marine shell and shell manufacturing debris at Salmon Pueblo suggests it is very likely the only remaining portion of a whole shell pendant.



Figure 3.6. Examples of shell pendants from Salmon Pueblo: a. *Pteria/Pinctada* trapezoidal tab pendant in two pieces (SRM Catalog Nos. 107 and 108), b. a *Glycymeris* bracelet/pendant (SRM Catalog No. unknown), c. *Anomia peruviana* “sunburst” pendant (SRM Catalog No. unknown), and d. an *Anodonta californiensis* trapezoidal tab pendant (SRM Catalog No. 105). Courtesy of the Salmon Ruins Museum. Photos by Jade Robison.



Figure 3.7. *Haliotis rufescens* (red abalone) unmodified pendant from Salmon Pueblo (SRM Catalog No. unknown). Courtesy of the Salmon Ruins Museum. Photos by Jade Robison.

*Cut Shell Pendants.* Cut shell pendants are ornaments that have been shaped into any variety of geometric or effigy forms and feature a ground perforation. Two cut shell pendants in the assemblage are both bracelets in their original form that were broken and subsequently reworked into pendants. The *Glycymeris gigantea* bracelet/pendant derives from a San Juan period context and exhibits a ground perforation at the umbo and broken edges that have been ground smooth. Its curved shape is irregular due to the location of the breaks, with one close to the umbo and the other much farther down the band in a fashion Jernigan (1978:50) equates to a “needle” shape. The other *Glycymeris* sp. bracelet fragment (Figure 3.6:b) was reworked into a crescent shaped pendant and exhibits a relatively large umbo perforation. Its broken edges were ground smooth into rounded points, much like the form described by Jernigan (1978:168) as a “coathanger.” The Hohokam and Ancestral Puebloans both practiced the salvaging of broken *Glycymeris* bracelets, and thus their presence at Salmon Pueblo may not necessarily signify a response to low-availability or inaccessibility to replacements (Jernigan 1978:48-50). Rather, these may have been greatly treasured pieces belonging to individuals who sought a new outlet for their use as an alternative to immediate discard. Nevertheless, it is also possible that these shell ornaments were introduced to the site following their transformation into pendants.

The other seven cut shell pendants from Salmon Pueblo are all geometric in form. The *Anomia peruviana* specimen features shallow notches on its unbroken rounded portion in the manner of a “sunburst” (Figure 3.6:c). Other examples of this type are known from Chaco Canyon that exhibit much more pronounced notches, although shallow notching is observed in many other examples from Ancestral Puebloan,

Mogollon, and Hohokam contexts (Jernigan 1978:165). Sunburst imagery, which becomes common in the 12<sup>th</sup> century, may evoke the intensity of the sun's rays or it might be a symbolic representation of flower imagery. As demonstrated by Hays-Gilpin and Hill (1999), the proliferation of flower imagery helped lead to the emergence of the Puebloan Kachina religion in serving as a symbol representative of female involvement in a ritual system dominated by males. However, this association with the example from Salmon Pueblo is only speculative and may represent something entirely different.

The other six tab pendants (represented by seven fragments) recovered from Salmon Pueblo are relatively thin and flat pieces of shell in various geometric shapes. Two of these are made of the freshwater species *Anodonta californiensis* and were recovered from a Mixed Chacoan and San Juan period context. The first is trapezoidal in shape with rounded corners and a small perforation (Figure 3.6:d). The other is of a similar, but non-uniform, shape with a larger perforation. A single *Haliotis cf. cracherodii* (black abalone) specimen, from an unknown context, was significantly reduced in size to a small, irregular oval shaped pendant and retains a small amount of cortex. Two fragments of a *Pteria sp.* or *Pinctada sp.* specimen from a San Juan context refit to form a trapezoidal tab pendant with rounded corners (Figure 3.6:a). A small amount of cortex is present. The remaining tab pendants are fragmentary and derive from a San Juan period context. This includes an unidentified marine nacreous shell ground on three edges, although missing its perforation, and a very small fragment of an unidentified nacreous species with a break that goes through its drilled perforation.

*Tinklers.* One tinkler was recovered from a San Juan period context at Salmon Pueblo, which exhibits a groove and a drilled hole on one end along with some vestiges



of the *Conasprella ximenes* shell's original coloration (Figure 3.8). Tinklers are cone-shaped objects that produce a noise when rattled. The manufacturing process typically involves removal of the spire and perforation of the opposite end. Tinklers are pendants in the sense that their perforation permits suspension and visibility of the freely hanging surface. They were often sewn onto clothing, attached to the ends of sticks, or could hang from a necklace or bracelet (Jernigan 1978:164). Tinklers made of shell were not common until after AD 1100, and as suggested by their presence at Casas Grandes in great quantities, finished forms may have been distributed from northern Mexico, through the Hohokam, and onto Chaco for redistribution (Nelson 1991:55).

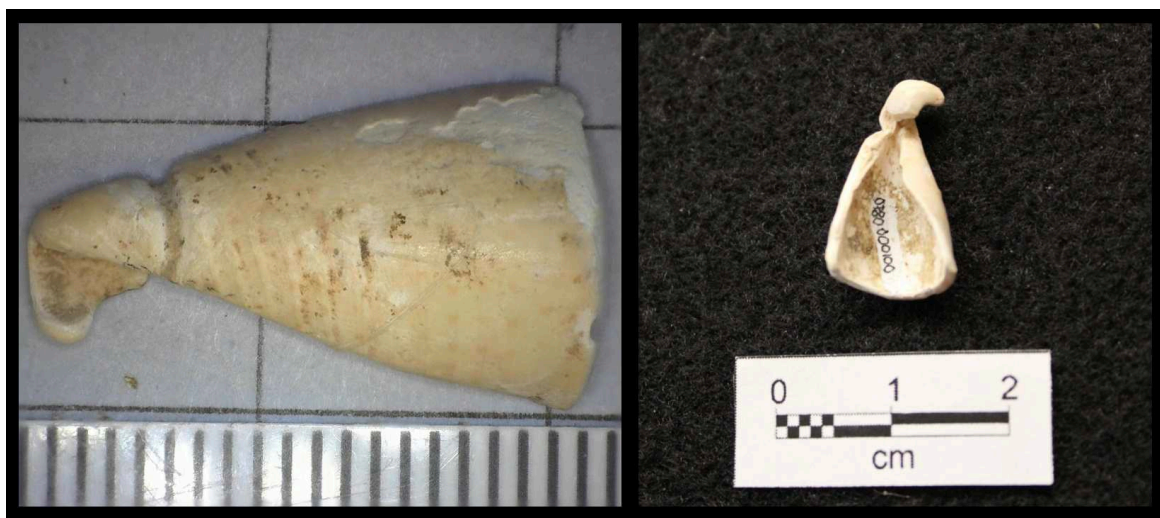


Figure 3.8. *Conasprella ximenes* tinkler from Salmon Pueblo (SRM Catalog No. 100). Courtesy of the Salmon Ruins Museum. Photos by Arthur Vokes (l) and Jade Robison (r).

### *Bracelets*

Two undecorated *Glycymeris* bracelet fragments were recovered from Salmon Pueblo. One fragment from a Mixed Chacoan and San Juan period context has a perforated umbo that is highlighted by its ground sides (Figure 3.9). The other, recovered from a Chacoan occupation layer, is a fragment of the band portion, with a missing umbo,

and is characterized by a double-faceted profile from significant edge grinding.

*Glycymeris* bracelets are one of the most common shell ornaments recovered from Hohokam sites and their distribution throughout the Southwest indicates this ornament form remained popular throughout the entire Hohokam sequence (Nelson 1991:40; Vokes 1984:498). A number of methods were employed in the manufacture of bracelets, all of which involve removal of the central portion of the valve followed by abrasion of the surface for smoothing and polishing (Vokes 1984:499). Many bracelets were undecorated, with little to no modification of the umbo, although some were decorated with incised motifs or embellished with effigies.



Figure 3.9. A *Glycymeris* sp. bracelet from Salmon Pueblo, showing two sides (SRM Catalog No. 385). Courtesy of the Salmon Ruins Museum. Photos by Jade Robison.

### *Mosaic Tesserae*

Two *Haliotis* sp. mosaic tesserae were recovered from Salmon Pueblo in direct association with each other within a Chacoan period context. The two pieces are rectangular in shape and feature one beveled edge each going inwards towards the exterior shell surface. All other edges are straight. Beveling is meant to ensure close fitting of the tesserae when fitting them together as overlays on another surface for decorative purposes (Jernigan 1978; Nelson 1991:64).

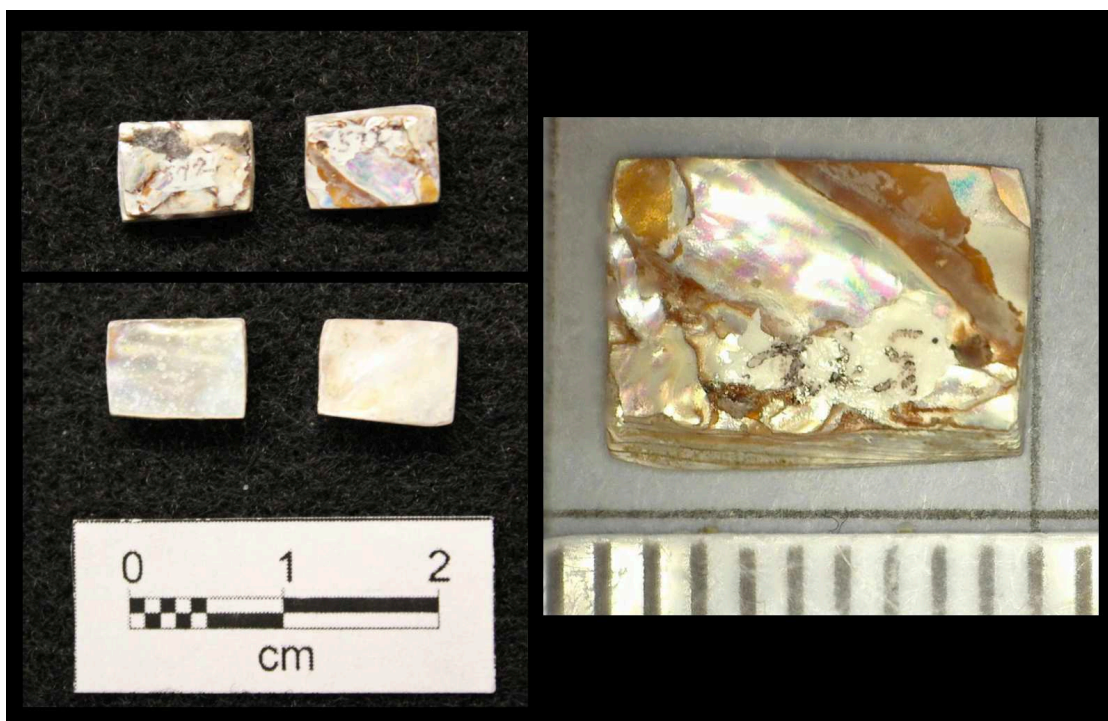


Figure 3.10. Left: Two *Haliotis* sp. mosaic tesserae from Salmon Pueblo, showing two sides (Catalog No. 572). Right: Magnified image of one of the *Haliotis* sp. mosaic pieces to show its beveled edge. Courtesy of the Salmon Ruins Museum. Photos by Jade Robison (l) and Arthur Vokes (r).

### *Summary*

Taxonomic identification and stylistic analysis involved examination of 271

shell items from Salmon Pueblo. This number includes 10 land snails that were culturally unmodified and are incidental to the assemblage. The majority of shell ornaments (n=91) were manufactured from Gulf of California species, although a few derived from Pacific coastal waters (n=11), and 144 are marine species. Only three shell ornaments (*Anodonta californiensis* pendants) are freshwater species. Beads are the overwhelming majority (n=244) and are the most diverse of the shell ornament forms, consisting of 10 bead types. Other shell ornament forms are less numerous, with 13 pendants, 2 bracelets, and 2 mosaic tesserae all present in the assemblage. The overall impression resulting from taxonomic identification and stylistic analysis is that the Gulf of California supplied the majority of shell and beads were the most accessible or preferred shell ornament form.

### **Shell Ornament Distribution at Salmon Pueblo**

The present study on shell ornament distribution at Salmon Pueblo comprises 156 shell ornaments recovered from the 1970s excavations, which includes the entirety of the shell ornament assemblage with known provenience. This number excludes the 10 shells deemed non-cultural. Shell is widely distributed across 35 rooms (Figure 3.11), including the Great Kiva and Tower Kiva, in addition to one test trench (TT10) and three plaza trenches (11P, 14P, and 20P). It is important to note that this distribution reflects the excavation procedures and collection strategies undertaken, which are detailed in Irwin-Williams et al. (2006). The first two years of excavation involved screening through 6 mm mesh, and after 1972, full screening occurred for only occupational strata and the

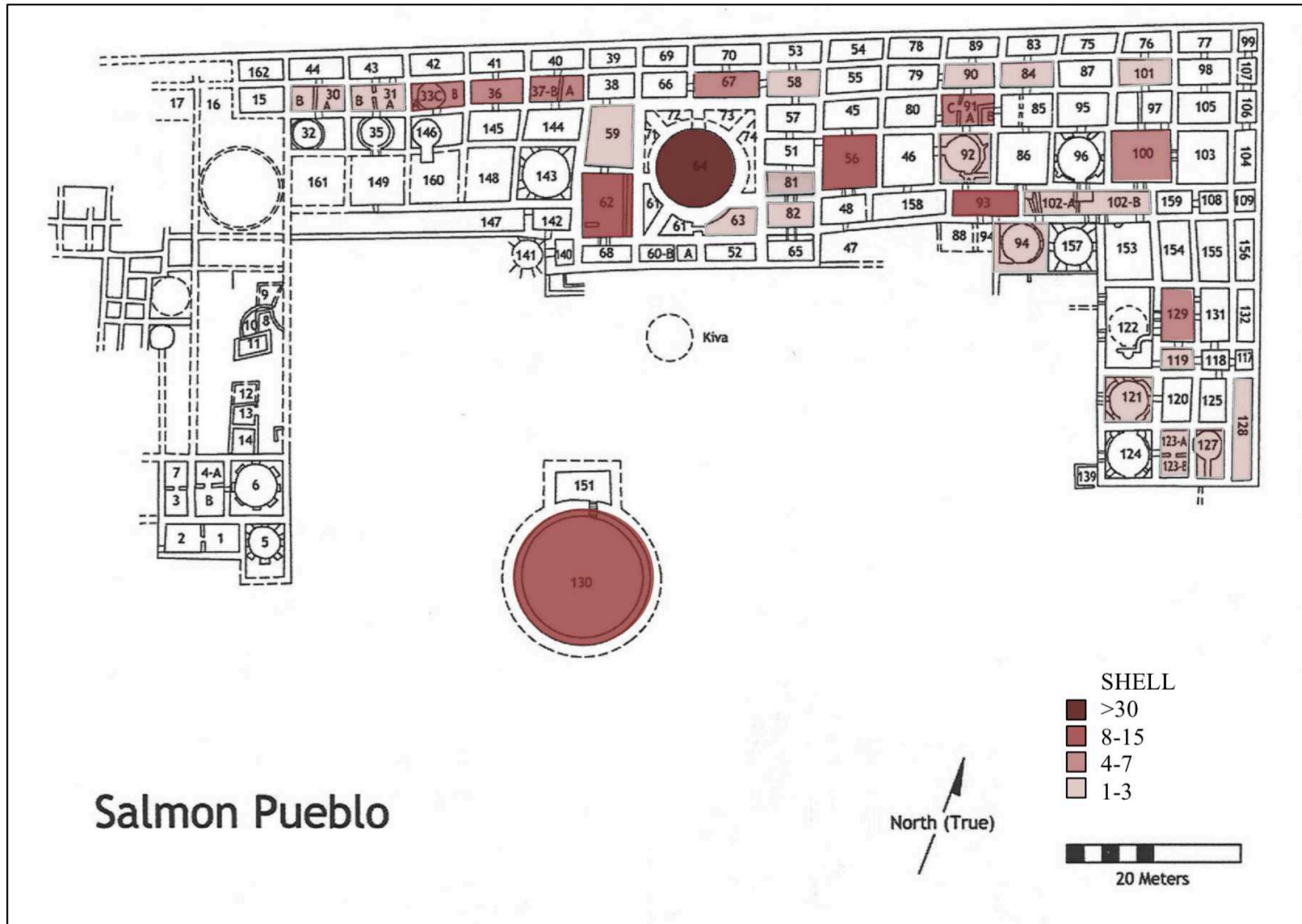


Figure 3.11. Shell ornament distribution in rooms and kivas at Salmon Pueblo. Modified from P. Reed 2006b:Figure 1.3.

initial test grid in each room (Irwin-Williams et al. 2006:59). Only 30% of the site was excavated (Irwin-Williams et al. 2006:Figure 5.1), and thus the following shell distribution analysis reflects this limited, yet incredibly dense, amount of data that contributes to a broader understanding of Salmon Pueblo.

### *Temporal Distribution*

Temporally, shell was most abundant in San Juan period contexts (n=79; 51% of total assemblage), followed by the Mixed Chacoan and San Juan period (n=42; 27% of total assemblage), and the Chacoan occupation, which accounts for 28 pieces of shell (18% of total assemblage). Seven shell ornaments are from an unknown occupation due to unclear vertical context. The temporal distribution might suggest the occupants of Salmon Pueblo experienced increasing accessibility to shell ornaments over time, that there was a greater interest in acquiring shell in later periods, or that shell was retained by individuals for as long as possible and passed on with each generation. Access to marine shell from both the Gulf of California and the Pacific coast of California remained constant throughout the entire occupational sequence. There is no significant temporal correlation to changes in stylistic types aside from a substantial increase in bilobed beads in the San Juan period (n=29), compared to only four in the Mixed Chacoan and San Juan period and one in the Chacoan period.

### *Vertical Distribution*

Excavation of the great house in the 1970s involved the development of a specific

nomenclature system in order to tackle the complex stratigraphy (R. Adams 2006). This resulted in the development of 24 stratum types designated A through X; shell is contained within 12 of these alphabetic categories (Table 3.3; Figure 3.12). The stratigraphic distribution of shell ornaments is quite revealing in terms of understanding disposal practices and intentional (or unintentional) deposition of shell within specific contexts. Patterns of deposition vary between rooms, although shell distribution overwhelmingly favored structured trash contexts (Stratum C; n=67; 43% of shell assemblage), where the widest variety of ornament forms also appeared. This stratum included dense cultural material believed to be remaining in situ and provides insights into differential disposal practices, such as trash heaps within rooms or material that was tossed through doorways or openings in the floors of second-story rooms. Materials in these layers are assumed to have been intentionally discarded. In nearly all instances, shell beads and other shell forms recovered from structured trash deposits were isolated pieces in the sense that they were not associated with other ornaments.

Structured trash was distinguished from other forms of refuse deposits. Three beads were deposited within occupational fill (Stratum G), which includes the gradual accumulation of cultural material and may reflect the redeposit of trash from one place to another. Stratum M, the unstructured trash that included one whole shell bead, comprised more massive, heterogeneous deposits often consisting of both cultural and natural material, representing refuse either naturally redeposited or transported to a different location. Smaller quantities of shell were distributed throughout eight additional stratum types, including six in archaeological backfill, two whole shell beads in an unknown stratum, and one whole shell bead in the plaza (Stratum Q). The floor structure itself

Table 3.3. Distribution of the shell ornaments from Salmon Pueblo by stratum.

Stratum	Description	Shell Ornament Types	Shell Count	% of Shell Assemblage	Room(s)
<b>B</b>	Postoccupational fill	2 beads 1 saucer bead 1 whole shell bead	4	2.56%	20P, 33B, 94W
<b>C</b>	Structured trash	20 beads 15 whole shell beads 8 pendants 5 barrel beads 4 bilobed beads 3 disc beads 2 saucer beads 2 bracelets 3 unknown 1 bracelet/pendant 1 end-ground bead 1 split drilled bead 1 tinkler	67	42.95%	8BW, 11P, 14P, 30W, 31W, 36W, 37W, 56W, 58W, 59W, 62W, 67W, 81W, 82W, 84W, 91W/A, 93W, 100W, 101W, 102A, 123A, 129W, 130W, TT10
<b>F</b>	Roof structure	14 whole shell beads 7 beads 1 barrel bead 1 disc bead	23	14.74%	33W, 36W, 37W, 56W, 62A, 63W, 64W, 67W, 90W, 93W, 127W, 129W, 130W
<b>G</b>	Occupational fill	2 whole shell beads 1 bead	3	1.92%	30B, 31W, 121A
<b>H</b>	Floor surface	2 whole shell beads 2 beads 1 unknown	5	3.21%	84W, 93W, 101W, 130W
<b>I</b>	Floor structure	2 mosaic tesserae 1 pendant 1 bead 1 whole shell bead 1 unknown	6	3.85%	58W, 62A, 93W, 102C, 129W
<b>L</b>	Feature fill	28 bilobed beads 3 whole shell beads 1 disc bead 1 tubular bead 1 bead	34	21.79%	64W, 82W, 92W, 93W, 128A, 130W
<b>M</b>	Unstructured trash	1 whole shell bead	1	0.64%	58W
<b>N</b>	Natural roof-fall	2 bilobed beads 1 barrel bead	3	1.92%	100W, 119W
<b>P</b>	Archaeological backfill	4 beads 1 disc bead 1 pendant	6	3.85%	11P, 91A, 102A, 127W, 130W
<b>Q</b>	Zonal, extramural living surface	1 whole shell bead	1	0.64%	20P
<b>X</b>	Unknown	2 whole shell beads	2	1.28%	130W
<b>no data</b>	-	1 bead	1	0.64%	62W
<b>Total</b>			<b>156</b>	<b>100.00%</b>	



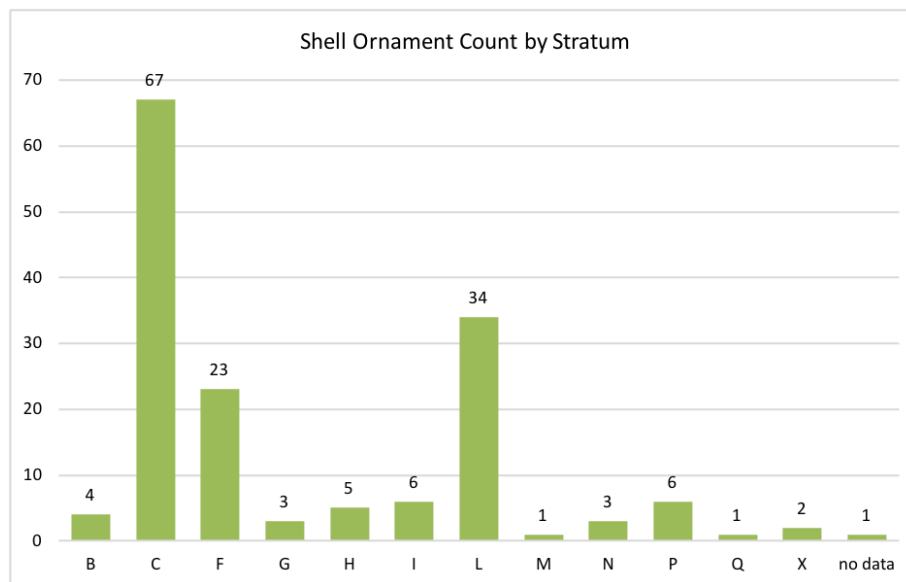


Figure 3.12. Count of shell ornaments from Salmon Pueblo by stratigraphic context.

(Stratum I), usually consisting of hard-packed sand or adobe, contained six shell ornaments, while the floor surface (Stratum H), which consisted of the contact surface immediately above the floor structure, included 12 shell ornaments. Postoccupational fill (Stratum B) is the noncultural fill that accumulated between occupation episodes or abandonment, which included four beads.

The second highest stratigraphic context in which shell occurred was within feature fill (Stratum L;  $n=34$ ; 22% of the assemblage). This included one disc bead located within a turkey pen in Room 128A (Feature 4), one tubular bead in a bell-shaped pit in Room 93W (Feature 47), and one whole shell bead in a hearth (Feature 3) that was placed within the doorway connecting rooms 81W and 82W. A shell bead was deposited within the sandy fill of a Chacoan period floor vault in Room 92W (Feature 33), which was located just below a pit associated with a floor surface. The floor vault was lined with shaped sandstone and quartzite, covered in adobe, and contained a large amount of

cultural material including ornaments made of other material (one mosaic piece and one unknown form). The other 23 shell beads were deposited in feature fill in the Great Kiva and Tower Kiva, which will be discussed later.

Twenty-three shell beads were associated with the roof structure (Stratum F), representing almost 15% of the assemblage. This stratum was assigned to the intact roof itself or the deposit resulting in the rapid collapse of the roof. This stratum was distinguished from natural roof-fall (Stratum N), which included deposits of isolated roof fragments and building debris characteristic of a gradual deterioration of the roof. Three beads were included in this “N” stratum type. The association of shell with the roof structure may signify a number of former events including the ceremonial termination of a structure upon its intentional destruction or collapse or the mixing of upper story deposits with those of the first floor upon collapse of the structure. Evaluating the horizontal distribution is necessary to further understand these stratigraphic associations.

#### *Horizontal Distribution*

Shell was dispersed throughout nearly all roomblocks, although there was a greater concentration in the east-northeast sector of the great house that included rooms associated with 93W and 102A/B (refer to Figure 3.11). The central area featuring the Tower Kiva and select rooms surrounding it had a high concentration of shell, and only rooms in the second tier (second from the back wall) of the northwest sector contained shell. In order to more fully interpret these associations, I evaluated the contexts within which shell occurred based on the categorization of rooms according to their inferred primary room function. I based the classification of room type on evaluation of field

records available from SPARC, room descriptions provided by P. Reed (2006a), and P. Reed's (2008) examination of residential and ritual spaces at Salmon Pueblo. In some instances, San Juan occupants repurposed spaces within the great house for alternative uses. For example, Chacoan occupants utilized 129W as a residential room and milling facility, until it was "abandoned" and San Juan inhabitants repurposed it as a primary trash repository. Therefore, consideration of room function for each of these periods separately is necessary. Room activity during the primary Chacoan and secondary San Juan periods indicates occupants utilized spaces for either domestic activity or specialized non-domestic functions (Table 3.4; Figure 3.13).

*Domestic Spaces.* A great deal of daily activity occurred in domestic spaces related to storage, milling, trash disposal, and specialized activities such as food preparation and faunal processing. Residential rooms were usually identified by the presence of one or more hearths, although they might have featured a limited number of storage pits and trash deposits (P. Reed 2008:48). Domestic spaces presented the majority of shell ornaments in the Chacoan period (24 overall), 10 of which were contained within residential rooms. Chacoan milling facilities, which were more concentrated in the roomblocks east of the Tower Kiva (P. Reed 2008:50-52), contained seven shell ornaments, while other food processing activities featured six shell ornaments, and only one was located in storage rooms.

Distribution of shell ornaments in San Juan period domestic spaces was quite different from the Chacoan period. Some shell appeared in trash repositories, while the majority was located in storage and milling facilities, and none appeared in rooms

Table 3.4. Count of shell ornaments by inferred primary room function and period of occupation at Salmon Pueblo.

Inferred Primary Room Function	Chacoan Period		Mixed Chacoan and San Juan Periods		San Juan Period	
	Shell Count	Rooms	Shell Count	Rooms	Shell Count	Rooms
<b>Domestic</b>						
Residential / Trash	8 beads, 2 pendants	30W, 33W, 56W, 91W	8 beads	36W, 91, 100W, 129W	-	-
Storage / Trash	1 bead	101W	15 beads 1 pendant 1 bracelet	37W, 56W, 58W, 67W, 101W	9 beads 2 pendants	30B, 37W, 58W, 90W, 91A
Milling	4 beads, 2 mosaic tesserae, 1 bracelet	92W, 93W, 100W, 129W	2 beads	127W	9 beads 4 pendants	36W (2nd story), 93W, 123A
Trash	-	-	-	-	3 beads 1 pendant	36W (1st story), 129W
Specialized domestic	6 beads	31W, 84W, 102A/C	-	-	1 bead	128A
Unknown	-	-	1 pendant	8BW	-	-
<b>Specialized non-domestic</b>						
Kiva	-	-	2 beads	130W	38 beads	64W, 94W, 121A, 130W
Structural support for kiva	1 bead	63W	-	-	1 bead	33B
Special use	2 beads, 1 pendant	81W, 82W, 119W	9 beads 1 pendant	62W	4 beads 2 unknown	59W, 62W/A, 82W

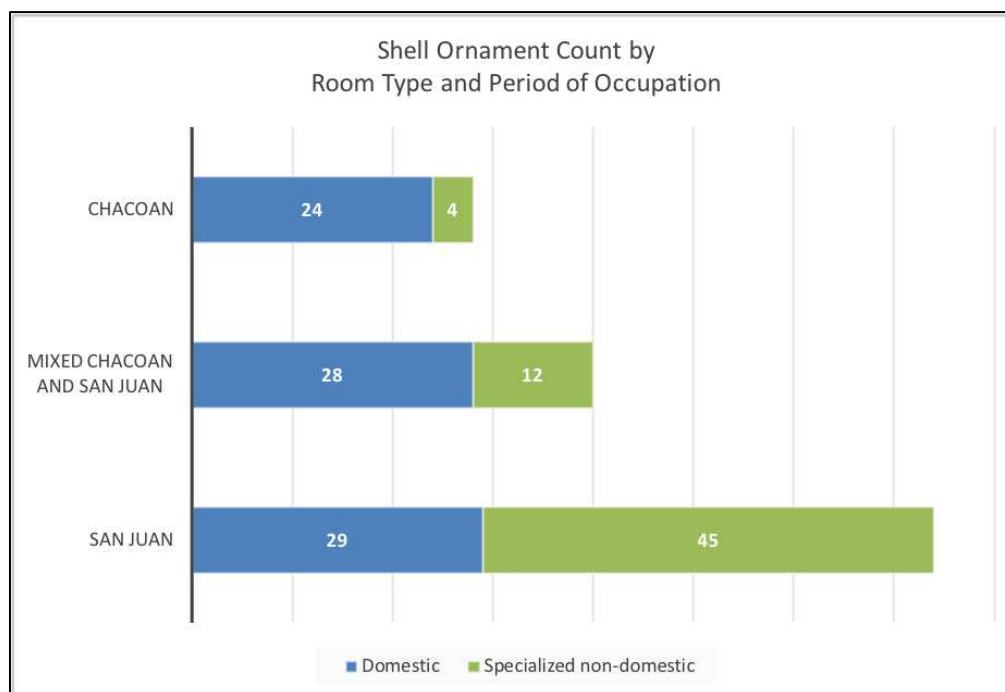


Figure 3.13. Count of shell ornaments by inferred primary room function and period of occupation at Salmon Pueblo.

functioning solely for residential purposes. The concentration of shell ornaments within storage rooms and milling facilities was especially pronounced during the San Juan occupation – of the 29 shell ornaments located in domestic spaces during the San Juan period, 24 were deposited within storage and milling spaces. It is possible that shell ornaments were deliberately cached within these rooms in a practice of safekeeping, although this is not likely as the shell ornaments were found individually, rather than among other ornaments or cached objects, and they appeared throughout trash strata. Instead, the distribution of shell within storage and milling facilities might reflect use of the rooms by a select number of individuals who had access to and frequented these spaces.

Although shell ornaments were widely distributed across the great house during all periods of occupation, their concentration appeared greatest in the roomblock associated with 93W during the San Juan occupation, which included 13 beads and three pendants. In addition to Room 93W, shell was deposited within three other spaces associated with the roomblock (94W, 91A, 90W). Room 93W contained more shell ornaments than any other room utilized for domestic activities. This space was one of the original gallery rooms facing the plaza and was among the most intensively occupied, consisting of 82 strata with four Chacoan and three San Juan floors (P. Reed 2006a:181-182). The 45 features were primarily associated with the Chacoan occupation, which included hearths, wall niches, an ash pit, and bell-shaped storage pits. A single Chacoan bead was located within a bell-shaped pit (Feature 47). The other 10 shell ornaments (two pendants and eight beads) were from San Juan contexts and contained within a variety of strata deposits. Room features indicate inhabitants utilized the space as a residential living structure throughout both periods of occupation, although it also served primarily as a milling facility (P. Reed 2006a:181). During the San Juan occupation, a roomblock kiva (94W) was constructed in front of 93W, closing off its access to the plaza. Additionally, 93W was connected via a separate doorway to the roomblock kiva in 92W, and thus Room 93W became an important access point to multiple ceremonial structures.

Room 129W is another complex room within the great house, as it exhibited 244 strata, and like Room 93W, contained more shell ornaments (n=11) than many of the other domestic spaces. Chacoan inhabitants utilized the space as a residential room, and then later repurposed it as a burial chamber and trash repository. Its purpose shifted to a milling bin facility, until it was abandoned and once again became a trash repository,

which continued into the San Juan period. Refuse was originally brought into the room and dumped, then it was thrown from the second floor through openings. The room included a macaw skeleton, pits, caches, several trash mounds, hearths, and vent windows. Two *Haliotis* mosaic tesserae, located on the floor, and one shell bead were deposited in the Chacoan period, while two were deposited in San Juan period strata.

The roomblocks west-southwest of the Tower Kiva exhibited a somewhat different pattern of distribution. Rather than being distributed throughout a variety of rooms like the gallery-facing and large, square rooms in the eastern half of the great house, shell ornaments were concentrated in the row of rooms second from the back northern wall (30W/B, 31W, 33W, 36W, 37W). This distribution may reflect the limited excavation that occurred in the rooms closer to the plaza. Occupants utilized these rooms for domestic purposes, including storage, milling, and specialized activities such as faunal processing/butchering and food preparation. Room 37W functioned as a space primarily for corn storage, although it also contained Chacoan period hearths. Five shell beads and one shell pendant were among the items discarded in trash deposits within the room. A single shell bead was recovered from a roof-fall stratum (F-2-5), which also contained many artifacts including Mesa Verdean ceramics, lithic and bone tools, a storage bin slab, and a pit of corn. The second story of Room 37W likely functioned for corn storage and habitation purposes. Distribution of shell ornaments in the other rooms within this second-tier is comparable to Room 37W, since they were concentrated mostly in trash strata, or in roof deposits associated with the second story.

*Specialized Non-Domestic Spaces.* Specialized non-domestic spaces include kivas, ritual artifact storage rooms, and interstitial spaces around roomblock kivas that

functioned as structural supports. Only four shell ornaments (3 beads and 1 pendant) were recovered from Chacoan period ceremonially-associated contexts, whereas 12 were recovered from Mixed Chacoan and San Juan occupation deposits and 45 from San Juan period contexts. The temporal distribution of shell ornaments across specialized non-domestic spaces suggests there was greater interest during later occupations of the great house in acquiring and depositing shell within ritually significant contexts in support of ceremonial activities. These changes in shell distribution correspond to substantial modifications of the great house that occurred in the San Juan period involving construction of numerous roomblock kivas within original Chacoan rooms (Baker 2006; P. Reed 2006a). The distribution of shell ornaments further corroborates the intensification of ceremonial practices at Salmon Pueblo.

Kivas. An example of the materiality of ceremonial dedication at Salmon Pueblo is the deliberate placement of shell ornaments within the pilasters of the Tower Kiva (Room 64W; Figure 3.14). The Tower Kiva was constructed by the residents of the primary occupation and thus featured Chacoan-style pilasters set low onto the interior encircling bench. Although the roof was destroyed during the terminal fire, it likely exhibited cribbed roofing construction that was typical of Chacoan-style kivas (Baker 2006; Lekson 1986). Upon remodeling of the Tower Kiva, the San Juan occupants chose to retain Chacoan-style features. Although each of the pilasters would have consisted of a log placed into the kiva wall in order to support a cribbed roof, no logs were contained within the pilasters, which instead had been filled with an ashy sand. A charred fragment of wood contained within one of the post sockets suggests the presence of an earlier roof that was destroyed in an event separate from the terminal fire.



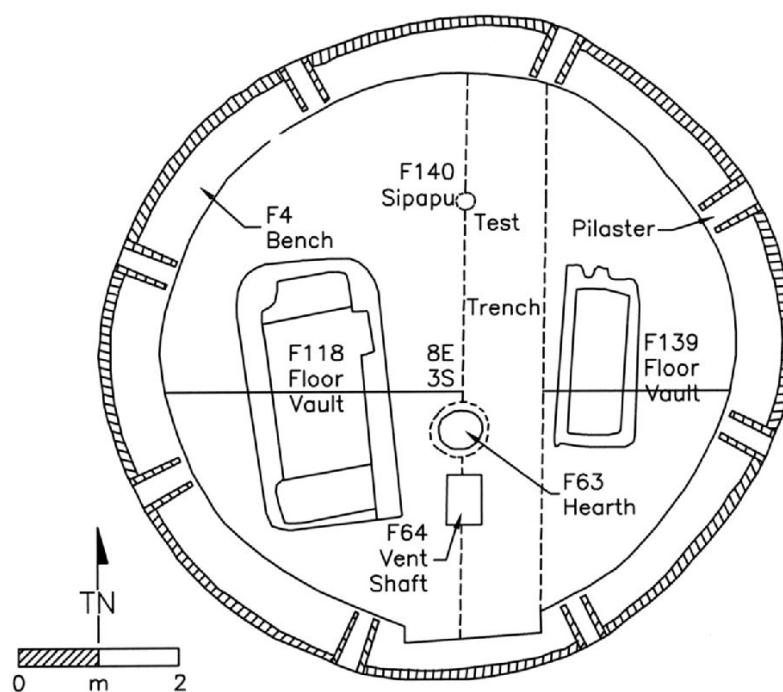


Figure 3.14. Map of Salmon Pueblo's Tower Kiva (Room 64W). (SPARC 2018e)

Within the sandy fill of six of the eight equidistant pilasters in the Tower Kiva, Salmon Pueblo's occupants deposited shell beads along with other associated objects as part of a ceremonial dedication of the structure (Table 3.5; Figure 3.15). One of these pilasters, Feature 45, contained two *Olivella* shell beads and six bilobed shell beads (incorrectly recorded in field records as bone beads), and two broken bone awls. Feature 46 contained at least nine shell bilobed beads and a bone awl. Worked bone appeared alongside shell in two other pilasters (Features 6 and 48), as well as lithics and ceramics. Shell bilobed beads made up the only deposits contained within two of the pilasters (Features 8 and 47). Two of the pilasters did not contain shell, with one (Feature 5) having ceramics and lithics, and the other (Feature 7) lacking any material offerings.

Table 3.5. Offerings placed within the pilasters of Salmon Pueblo's Tower Kiva (Room 64W).

<b>Pilaster (Feature No.)</b>	<b>Shell Ornaments (Located in museum)</b>	<b>Pilaster Offerings (According to field records)</b>
5	none	lithics and ceramics
6	none	1 <i>Olivella</i> whole shell bead 1 fragment of worked bone, 1 broken bone bilobed bead, lithics
7	none	1 quartzite mano fragment on bench near pilaster
8	5 bilobed beads (1 <i>Glycymeris</i> )	7 whole or broken small bone bilobed beads
45	6 bilobed beads (1 <i>Laevicardium</i> ) 1 <i>Olivella dama</i> whole shell bead	6 bilobed bone beads 2 <i>Olivella</i> whole shell beads 2 broken bone awls
46	9 bilobed beads	9 bone bilobed beads, 7 fragments of bone bilobed beads, 1 portion of bone awl
47	2 bilobed beads	2 bilobed bone beads, 1 fragment of a bone bilobed bead, 1 sandstone metate fragment on bench near pilaster
48	5 bilobed beads (1 <i>Glycymeris</i> and 1 <i>Laevicardium</i> ) 1 <i>Olivella dama</i> whole shell bead	2 bone awls, 1 <i>Olivella</i> whole shell bead 1 circular bead, unknown number of bilobed beads, lithics and ceramics
<b>Total</b>	<b>31</b>	

All of the shell ornaments that I located and analyzed at the Salmon Ruins Museum originating from the Tower Kiva's pilasters appeared burned as a result of the fire that destroyed the Tower Kiva and terminated occupation of the great house. According to field records, the San Juan period occupants deposited these pilaster offerings during a remodeling event that resulted in the removal of logs from the pilasters and their replacement with a sandy fill mixed with offerings. The act of secreting away shell ornaments and other valuable objects within concealed spaces signifies engagement



Figure 3.15. Shell beads recovered from the Tower Kiva (SRM Catalog Nos. 99, 103, 104, 151, 569, 570, 717). Courtesy of the Salmon Ruins Museum. Photo by Jade Robison.

with a shared memory of ritual practice. Although sealed from view indefinitely, these objects maintained significance for those who witnessed the renewal and rededication of the structure. The inclusion of shell ornaments within these concealed spaces was thus meant to ensure the structure would be ritually dressed throughout its use-life.

A different form of ceremonial dedication of shell ornaments at Salmon Pueblo was represented in the Great Kiva (130W), located in the plaza and associated with Chacoan period construction. The center of the Great Kiva and Tower Kiva align on a true-north axis (P. Reed 2006a:230). Except for the original postholes, all features either date to or were modified by San Juan occupants, all of which are focused around two large floor vaults (foot drums). San Juan inhabitants substantially modified the structure with the replacement of the roof, addition of a cobble berm, and updates to the interior masonry (P. Reed 2006a:230). The Great Kiva contained eight shell beads, including five

*Olivella* beads, one bilobed bead, and two unknown bead forms. Seven of these were not associated with a particular feature and were spread across multiple contexts, including one located in a trash deposit, one related to the roof structure, two associated with the floor surface, one found in archaeological backfill, and two with unknown context. None of the shell ornaments were deposited within Chacoan period contexts.

One *Laevicardium* sp. bilobed bead was deposited within the eastern floor vault/foot drum (Features 4 and 30) of the Great Kiva along with other offerings. This deposit was assigned to a Mixed Chacoan and San Juan period context in field records. The eastern and western floor vaults both featured an oval basin-shaped pit constructed of sandstone and adobe walls. According to field records, the cobbles lining the base of the eastern foot drum were smoothly polished. A matting of yucca fiber covered most of the base of the foot drum, and above this were corn and ceramics. Below the cobble base was fill that contained a variety of deposits, including yellow ochre, ceramics, calcite beads, and jet and turquoise ornaments. The shell bead, which was incorrectly recorded in field records as calcite, was located in the southwest corner of the foot drum near a piece of turquoise and a fragment of worked bone. It is possible that the other beads recovered from the floor vault were also mistakenly recorded as calcite, when they may in fact be shell, although these were not located in the museum. The prominence of the two floor vaults and their association with valuable objects indicates these were two of the most ceremonially significant features within the Great Kiva. The inclusion of a shell bead within the eastern floor vault further imbued the feature with greater meaning.

Shell ornaments have been found as components of offerings in roomblock kivas at other great house sites in a repetitive fashion that suggests a standardization of

ceremonial practice (Heitman 2011; Mills 2008:95). However, none of the roomblock kivas as Salmon Pueblo contained shell ornaments deposited in this capacity. Shell ornaments were found in two roomblock kivas associated with San Juan construction (94W and 121A). Room 94W was constructed in the plaza in front of rooms 102A and 93W in the mid-1100s to early 1200s (P. Reed 2006a:182). This room consisted of a square wall frame with a kiva placed inside. A single shell bead was contained within the postoccupational fill that also contained some adobe, lithics, ceramics, and bone, but little cultural material overall (Stratum B-1-2). Below this layer was a roof fall (F-1-3), consisting of decomposed wood and some cultural material, which covered a floor surface (H-1-4) with a great deal of cultural material and the kiva's deflector. Stratum B-1-2 appeared as the postoccupational fill covering the roof following its natural deterioration, and thus it is not clear whether the shell bead and associated cultural material were intentionally or naturally deposited in this particular space.

Similarly, the shell bead located within Kiva 121A was likely not ceremonially deposited. This roomblock kiva featured five pilasters, three niches, a central hearth, and a ventilation system. The single shell bead was contained within occupational fill (Stratum G-1-3), which lies above the floor surface of the kiva (Stratum H-1-4). This fill was clearly deposited in a separate event from the rubble layer lying above (Stratum B-102), and included some charcoal, lithics, ceramics, and bone. The occupational fill was likely a result of the gradual accumulation of cultural material or the redeposit of trash from one place to another.

Interstitial Spaces Around Kivas. Shell beads also made an appearance in the fill deposited within interstitial spaces surrounding the Tower Kiva and a San Juan period

roomblock kiva (Rooms 63W and 33B). These interstitial spaces functioned primarily as structural supports for the kiva walls and were sometimes oddly shaped as a result. One of the interstitial spaces surrounding the Tower Kiva, Room 63W, contained one bead within a roof-fall layer (Stratum F-0-0) that was deposited by Chacoan occupants. This space also contained postoccupational fill, structured trash, and artificial fill. Other cultural materials include ceramics, faunal artifacts, and lithic tools. The contents have been interpreted in field records as material deposited to fill the space.

The interstitial space designated as Room 33B occupied the area east of the roomblock kiva in Room 33C that was constructed within an original rectangular Chacoan room (33W). This was a relatively small space (2.9 x 2.1 m) and featured two latillas from the burned roof and two sets of burials with multiple burials. A single *Olivella* whole shell bead was deposited within B-2-6, a postoccupational fill layer that may actually represent artificial fill, and which also included bone, ceramics, and lithics. This layer was between the two burial episodes, although not directly associated with either of these interments. The inclusion of a single bead within the possible artificial fill layer may reflect accidental loss or the redeposit of refuse from one place to another. Lack of more specific context prevents consideration of the placement of the shell bead within this space as intentional.

Specialized Discard and Storage Rooms. A limited number of rooms at Salmon Pueblo have been interpreted as spaces dedicated to the storage or disposal of ritual objects. A total of sixteen shell ornaments (13 beads, 1 pendant, and 2 unknown shell forms) were recovered from a few of these rooms, including 62W/A, 81W, and 119W. The ceremonial storeroom and ritual object discard room 62W/A was the largest

identified at Salmon Pueblo (7.5 x 5.8 m) and was located directly west of the Tower Kiva (P. Reed 2006a:144). A large amount of perishable items have been recovered from the room, including coprolites, food remains, plants, matting, and feathers. Trash deposits covered the room in 90 strata and included disarticulated bones from two burials. In addition to serving as a trash depository and latrine, Room 62W served as a disposal location for ritual items no longer in use, including “corn mothers” (P. Reed 2006a:145). Corn mothers are considered by Puebloan groups as apical ancestors and are among the most sacred of Puebloan ritual effigies (Heitman 2016:477-478).

Given the high value of shell ornaments, it is not surprising that Room 62W/A contained the greatest quantity of shell (n=14) other than the Tower Kiva. The 62W portion of the room contained 12 shell ornaments, all of which were deposited in either the Mixed or San Juan occupation, and the majority (n=11) were from structured trash deposits, including one pendant, nine beads, and one unknown shell object (Figure 3.16). The other shell bead was from an unknown stratum. The 62A designation relates to the subdivision of the room during the San Juan period and included a sandstone bench, manos and metates, and hearth features, indicating habitation use, although possibly still part of a ritual function (P. Reed 2006a:149). The 62A portion of the room contained two shell objects, including one bead from a floor structure (I-2-6) and one unknown object from the collapsed roof (F-1-4). The high density of shell ornaments within this room and their association with other valuable objects in structured trash deposits suggests the great house residents intentionally disposed of these items within this space.



Figure 3.16. Selected shell ornaments from Room 62W/A at Salmon Pueblo (SRM Catalog Nos. 8, 18, 44, 64, 361, 416, 568, 721). Courtesy of the Salmon Ruins Museum. Photo by Jade Robison.

Four other rooms that contained a limited number of shell ornaments at Salmon Pueblo have been interpreted as spaces with a specialized non-domestic function (59W, 81W, 82W, 119W). However, the limited number of shell within these spaces (4 beads and 1 pendant) makes it difficult to ascertain whether shell ornaments were deposited purposefully as objects of ritual retirement or for some other special purpose related to the ceremonial significance of these rooms. Room 119W supported the storage of ritual artifacts, although the single shell bead in N-2-31, an unstructured roof stratum that included bone, ceramics, and bone awls, may not have been intentionally placed within this context as an object meant for ceremonial discard. One shell bead was deposited in a trash stratum (C-3-6) within Room 59W that also contained corn, ceramics, projectile points, bone awls, and other ornaments. Overlying this stratum was a matting of wood



and bark. The presence of a red sandstone mosaic of astronomical importance within the room indicates it had some special use, although the function is unclear. The association of the shell bead with the structured trash deposit might signify an intentional disposal of important objects within this specialized space.

Room 82W also contained an astronomical feature inferred to have importance for ceremonial activity. Other deposits within the room point to a special use, including milling bins, an altar-like feature, multiple pits, and a post structure. A shell pendant was located within a structured trash deposit (Stratum C-8-20). A hearth placed within the doorway connecting 82W with 81W contained a single shell bead, which upon analysis appeared blackened as a result of having been burned. One other shell bead was contained within Room 81W in a structured trash stratum (C-4-9) that also included large lithics, many sherds, flakes, and burned corn cobs. A rack or platform feature constructed of three upright posts and adobe contained many special objects including “corn mothers.” The shell ornaments contained within these specialized non-domestic rooms may reflect deliberate disposal or accidental loss. Regardless, it indicates that those who were accessing these special rooms also had access to obtaining shell ornaments.

#### *Summary of Shell Distribution at Salmon Pueblo*

Temporally, shell was most abundant in San Juan period contexts (51% of total assemblage), while the Chacoan occupation accounted for 18% of the total assemblage. The temporal distribution might warrant a number of interpretations: the occupants of Salmon Pueblo experienced increasing accessibility to shell ornaments over time, there

was a greater interest in acquiring shell in later periods, or shell was retained by individuals for as long as possible and passed on with each generation.

In order to further evaluate the spatial distribution, I examined the contexts within which shell occurred based on two room types. The first, domestic spaces, includes rooms used for habitation, milling facilities, storage, or faunal processing. The overall changes in quantity of shell ornaments within those rooms are insignificant. Shell was more abundant in rooms containing corn storage pits and milling bins, especially in the San Juan period. This suggests there was potentially differential access to shell within residential units; those who had access to storage, and who participated in the processing of corn, were the individuals who possessed shell ornaments. This may also indicate a ceremonial association between corn grinding and ritual preparations (Heitman 2017). The greater quantity of shell ornaments within the roomblock incorporating Room 93W suggests its residents had differential access to shell ornaments. Room 93W also maintained access to two ceremonial spaces – the roomblock kivas in 92W and 94W.

Specialized non-domestic spaces – kivas, ritual object storerooms, and interstitial spaces surrounding kivas – is the second room category where shell ornaments appeared. Room 62W/A is an example of a space where ritually important objects were deposited for storage and disposal, including 14 shell ornaments, which is more than any other room besides the Tower Kiva. Only four shell ornaments were discarded within specialized non-domestic spaces during the Chacoan period, although there is a drastic increase in the quantity of shell ornaments placed within these spaces during the San Juan period. Shell ornaments were not included as offerings within roomblock kivas, although a considerable quantity (n=31) was deposited within six of the eight pilasters in the

Tower Kiva and one shell bead was placed in the eastern foot drum of the Great Kiva along with other valuable objects. The temporal distribution of shell within specialized non-domestic spaces suggests Chacoan period residents employed shell ornaments for personal adornment, whereas San Juan period residents preferred utilizing shell ornaments for ceremonial purposes.

### **Discussion: Shell Ornamentation at Salmon Pueblo**

Examination of the shell ornament assemblage from Salmon Pueblo has informed a number of insights related to personal adornment, differential access, and ceremonial practice at this great house community. Prestige-seeking individuals, including those who migrated upon initial construction of Salmon Pueblo as well as the later individuals who occupied the great house, were highly invested in the acquisition of marine shell ornaments. Preference for beads and pendants is apparent, and these stylistic forms were equally as common in assemblages from other great house sites (Mathien 1997; Mattson 2016a, 2016b). Despite some differences in the distribution of shell compared to other great houses, such as the lack of shell ornaments in burial assemblages at Salmon Pueblo, a number of similarities appear that shed light on the participation of Salmon Pueblo's residents in referencing the Chacoan system of prestige centered on socially valued items.

#### *Prestige-Driven Exchange*

The taxonomic and stylistic variability in the shell assemblage is significant given the limited number of shell ornaments recovered from the site overall. Salmon Pueblo's occupants acquired finished shell products through an extensive trade network that

incorporated Pacific coastal populations and those residing near the Gulf of California. While marine shell from the Gulf of California made up most of the ornaments, shell from the Pacific coast of California was also a significant portion of the assemblage. Each of these provinces produce distinctive species that were utilized for ornament manufacture, and a wide variety is likewise represented in the ornament assemblage from Salmon Pueblo.

Variability in shell ornament stylistic forms indicates Salmon Pueblo's residents had access to numerous types of beads and more limited quantities of pendants and bracelets. Some shell specimens showed significant reduction, such as beads cut from the walls of *Olivella* shells and marine shell disc or bilobed beads, all of which would have required a significant amount of skill to produce (Curcija 2018; Hartzell 1991; Rick 2004). Other shell ornaments were not as carefully manufactured or required very minimal modification, including the *Olivella* whole shell beads and the unmodified red abalone pendant. Lack of shell ornament manufacturing debris, unfinished shell specimens, or bead blanks suggests all shell objects were acquired as finished products. The refashioning of two shell bracelets into pendants suggests the owners found a way to modify these items following their breakage as an alternative to immediate disposal. Many shell beads exhibited a great deal of polish from wear, indicating they were highly cherished by those who wore them.

### *Differential Access*

Although shell was distributed widely across the great house, a large number of rooms contained no shell or only a single shell ornament, while others contained a

significantly higher concentration of shell. As discussed previously, Room 93W contained a greater quantity of shell than any other residential space. The room's physical connection via multiple doorways to neighboring San Juan roomblock kivas, including the kivas in both 94W and 92W, indicates the occupants had differential access to two ritual structures. The individuals maintaining these important connections clearly had greater access to shell ornaments. Besides Room 93W, only one other room, 56W, contained more shell ornaments (eight total) than the Great Kiva, and only Room 37W matched the Great Kiva in quantity of shell (seven shell items in each structure). These concentrations are in deep contrast to those rooms that contained only a single shell bead, or none at all, of which there are many (refer to Figure 3.11). These distributions point to some degree of unequal access to finished shell products.

Variations in distribution also occurred within roomblocks themselves. Shell ornaments were more heavily concentrated in storage and milling rooms, as opposed to rooms that served primarily as residential living spaces or the rooms located in the back row furthest from the plaza. This suggests that individuals residing within a roomblock unit who maintained access to storage and controlled food preparation activities also had greater access to shell ornaments. Although shell ornaments did not make a significant appearance within roomblock kivas, they were concentrated in domestic rooms that maintained sole access to, or were otherwise one of the only entryways into, a roomblock kiva. The higher concentration of shell ornaments deposited within these domestic spaces might again reflect the greater access to these items by individuals who maintained control over ceremonial activities that occurred within the kiva.

*Ceremonial Practice*

The absence of shell from mortuary contexts at Salmon Pueblo is surprising given the large quantities that have been recovered at other comparable great house sites as either a mortuary offerings or a component of the ornate dressing of the deceased individual (Mattson 2016a; Plog and Heitman 2010). In addition, burials at Salmon Pueblo contained limited quantities of ornaments of any material (McNeil 1986; Shipman 2006). The Chacoan “Bow Priest” burial in Room 33W, one of the most significant at Salmon Pueblo in terms of its material components, contained a great deal of mortuary offerings, and aside from a turquoise water serpent effigy, no other ornaments appeared in the burial assemblage (Shipman 2006). This is in striking contrast to usual practices at great houses, where shell and other ornaments of considerable value, including those made of turquoise, shale, and jet, often accompanied high status individuals in burial. For example, over 74% of the ornament assemblage from Pueblo Bonito was contained within burials (Mattson 2016a:129). Additionally, Room 41 at Aztec West contained two 20-foot long strands of more than 400 *Olivella* shell beads that were placed around the necks of deceased individuals, and strands of beads accompanied individuals in other burials throughout the site (Morris 1919:93).

Nevertheless, there may be a correlation between disposal of shell ornaments in specific rooms at Salmon Pueblo and the interment of human remains. Excluding the human remains and shell ornaments recovered from the Tower Kiva and the test or plaza trenches, the number of shell ornaments in rooms that also contained at least one burial is quite high (n=83) compared to the quantity within rooms that contained no burials (n=31; See Shipman 2006). The practice of depositing shell ornaments within rooms containing

mortuary remains may be closely tied to practices of ancestor veneration. Upon reanalysis of the burial sequence in Room 33 at Pueblo Bonito, Plog and Heitman (2010) argue the continual placement of offerings and deceased individuals within the oldest section of the great house reflects a deliberate strategy to establish a direct association with the past. The practice of interring highly valued objects and heirlooms within and near this burial cluster functioned to legitimize attainment of authority and prestige (Heitman 2015). The disposal of shell ornaments within rooms containing burials at Salmon Pueblo may have served similar purposes.

*Concealed Ceremonial Deposition.* As Mills (2008) has demonstrated in her discussion of ornaments at great house sites within Chaco Canyon and at Aztec Ruins, ornaments were employed in the act of forgetting and in memory formation. She points to the importance of secrecy and the act of sealing ritually significant objects as part of the dedication and commemoration of structures. Ornaments were intentionally placed within kivas as pilaster offerings or in floor vaults and on benches between stages of remodeling (Mills 2008:90). Such practices at Salmon Pueblo are evident in the contexts in which shell beads have been recovered from the Tower Kiva and Great Kiva. The Tower Kiva contained the greatest quantity of shell ornaments, which were deposited as offerings within the structure's pilasters. The San Juan occupants deposited these shell ornaments during a remodeling event that involved the removal of logs and their subsequent replacement with sandy fill. In this way, shell ornaments, along with other valuable items, were employed in the dedication of a new life stage of the structure and served as powerful objects that indefinitely confirmed the structure's ritual authority. The presence

of shell ornaments within these structures signifies a shared understanding and participation in the materiality of ritual action that characterized the Chacoan ritual network.

Another form of concealed ceremonial deposition is the disposal of valuable items within rooms dedicated to retirement of ritual objects. The deposition of shell and other valuable items within these rooms illustrates an alternative pathway of discard for objects too ritually charged to be disposed of in any other way. The topic of specialized discard pathways has been explored by Mills (2002) and others (Walker and Lucero 2000) to identify motivations for disposal of socially valued items in places other than ordinary middens. Through this type of disposal, items were secreted away as objects of social memory as opposed to operating to enhance the leadership or prestige status of a single individual through deposition within a burial (Mills 2002, 2004; Walker and Lucero 2000). The practice of ritual retirement of objects is known at other great houses, including Pueblo Bonito and Chetro Ketl (Mills 2008). Rooms 10 and 13 at Pueblo Bonito contained many objects, including shell trumpets, altar pieces, and items used in tool and ornament manufacture, and Room 28 contained a cache of cylinder jars, shell trumpets, copper, and many ornaments (Pepper 1920:54-57, 67-69; 129-163). The objects left behind in these rooms at Pueblo Bonito signify “material manifestations of ritual engagements,” illustrating one way in which a room and its objects may be eternally memorialized (Mills 2008:107).

This practice of abandonment was also observed in Room 62W at Salmon Pueblo, the largest room at the great house, containing more shell than the Great Kiva, and only second to the Tower Kiva in overall quantity. Its location directly west of the Tower



Kiva, and the presence of numerous strata of structured trash deposits containing a slew of ritual objects and perishable items, indicates this room may have served as the location for the disposal of ceremonial objects. The 13 shell pieces deposited in the structured trash layer, which included one pendant, may reflect this intentional abandonment. The abandonment of objects in a room dedicated to ritual artifact storage or retirement signifies an intentional deposition of items deemed too powerful to be disposed of in an ordinary fashion.

### **Conclusion**

The residents of Salmon Pueblo participated in a prestige-driven exchange network centered on Chaco Canyon through the acquisition of marine shell ornaments. As objects fashioned for the adornment of both people and buildings, marine shell was imbued with social meanings of power, wealth, belonging, and cosmological origins. Shell ornaments were employed in ways that intimately linked people to identity and social memory, as possession of these items encouraged participation in a shared ideology. In other great house communities within Chaco Canyon and beyond, shell ornaments were preferred offerings for the ceremonial dedication and termination of ritual structures. Shell placed in kivas beneath pilasters, atop benches, and within niches assured these structures would be ritually outfitted throughout their use. Related practices at Salmon Pueblo include the ceremonial interring of shell beads within the pilasters of the Tower Kiva and the foot drum of the Great Kiva.

Insights into trading relationships are built upon taxonomic identification and stylistic analysis of shell ornaments. A significant variety of shell species is represented

in the assemblage from Salmon Pueblo despite the limited quantity of shell recovered from the site overall. Many of these species originated in the waters of the Gulf of California, while some were of Pacific coastal origin. The representation of both provinces in the form of numerous species speaks to the significant extent of trade that occurred in the Middle San Juan and at Salmon Pueblo during the period of AD 1090 to perhaps as late as 1280. There is no evidence of shell ornament manufacture at Salmon Pueblo, indicating all shell ornaments were imported as finished products. The expansive stylistic assortment of shell beads is substantial, although pendants, bracelets, and mosaic tesserae appear in more limited quantities and varieties. Substantial amounts of polish due to wear on many of the ornaments suggests they were used a great deal for personal adornment over a long period of time.

Access to finished shell products was limited due to their exotic nature. The concentration of shell ornaments within certain roomblocks and residential rooms at Salmon Pueblo suggests occupants had unequal access to finished shell products. Differential burial practices further exemplify the presence of vertical social relations, and thus the occurrence of ornaments within mortuary contexts was expected. The lack of shell ornaments in mortuary contexts at Salmon Pueblo is in striking contrast to usual practices at great houses, including Aztec Ruins and Pueblo Bonito. The lack of shell and other ornaments deposited within burial assemblages suggests a communal, rather than individual, ownership of these prestige items by kinship networks. While possessions owned by an individual were typically buried with the deceased, collectively owned items were passed on to subsequent generations as family heirlooms (Mills 2008:100). In addition, the exclusion of shell ornaments from mortuary contexts might signify changes

in the way high status individuals were perceived or reflect a restriction on the use of shell for other ceremonial purposes.

The occupants of Salmon Pueblo actively participated in the Chacoan ideological and cosmological network as demonstrated through activities related to the ceremonial deposition of shell ornaments. The sealing of shell beads within ritually powerful contexts – within the eastern foot drum of the Great Kiva and pilasters in the Tower Kiva – supported the consolidation of a Chacoan identity and legitimization of authority. The disposal of shell ornaments within Room 62W along with other ritually retired objects reflects a shared social memory that connected the Salmon Pueblo occupants to the powerful leaders at Chaco. Prestige-seeking individuals who maintained access to these spaces monopolized access to shell ornaments and the other room contents. The deliberate placement of shell objects within such a ritually charged environment may have served to legitimize a connection to the Chacoan ideological and ceremonial past.

As demonstrated in this discussion of shell ornamentation, the Chacoan influence extended north to the Middle San Juan with the establishment of the great house at Salmon Pueblo in AD 1090, and later with the construction of Aztec Ruins c. AD 1110. These great house communities referenced their ancestral ties to Chaco Canyon through visible displays of Chacoan masonry, kivas, and material culture, including ceramics and ornaments made of shell, turquoise, jet, and a range of other imported and local material. Many groups in the prehispanic Southwest engaged in the exchange of marine shell for use as personal ornaments and social indicators of prestige. Yet the participation of Salmon Pueblo's residents in the sealing of shell within ritual storerooms and kiva pilasters signifies a shared habitus and engagement with a ritual network centered on

Chaco. As demonstrated in the distribution of marine shell at Salmon Pueblo, objects of high prestige and social value were highly active in consolidating community identity and shaping the ritual activities of the great house occupants. Research on the distribution of the complete ornament assemblage at Salmon Pueblo might further inform our understanding of how social memory encourages ritual cooperation and operates in shaping identity.

## CHAPTER FOUR

## CONCLUSION

The papers presented in Chapters Two and Three contribute to the ongoing dialogue within archaeology regarding the materiality of memory practices in the past. Scholars have devised many useful ways of thinking about the archaeology of memory and memory studies in general. Connerton (1989) has distinguished between inscribed memory and embodied memory. The former includes things like texts, representations, and monuments, while the latter involves ritual action and behavior, or activities that might be transitory. Van Dyke and Alcock (2003) further break down these distinctive forms of memory into four categories of media through which memory is employed and constructed. These include ritual behavior, narratives, representations and objects, and places. It is useful to consider these four manifestations of memory and how they intertwine with the central themes of the two papers presented in the previous two chapters.

*Ritual behavior* often involves activities related to the commemoration of events, veneration of ancestors, interment of remains, or ritual feasting (Van Dyke and Alcock 2003:4). This type of memory work is archaeologically visible through the material signatures of these activities. The residents of Salmon Pueblo did not deposit shell ornaments directly within burial assemblages. Instead they placed these items within ceremonial contexts and ritually charged spaces, including kivas, ritual artifact storerooms, and rooms containing the remains of ancestors. The placement of shell within

the pilasters of the Tower Kiva signify a collective strategy for ritually dressing and animating the structure that was dependent upon a social memory of ritual behavior.

*Narratives* take the form of textual accounts and oral traditions and histories (Van Dyke and Alcock 2003:4). Written accounts offer collections of fixed memories of the past and provide valuable information about former events. Oral traditions and oral histories of Native groups offer an alternative to the textual accounts that have historically prioritized Euro-American voices. In Chapter Two, I employed narratives in my assessment of how 19<sup>th</sup> century European settlers and displaced Cherokee experienced the Natchitoches Trace trailscape. George Featherstonhaugh's account of his travels along the trail and his brief stay at the Harris family's cabin provides one example of how the trail was experienced. In a similar fashion, narratives of Cherokee Trail of Tears survivors and their descendants convey a deeply emotional sense of suffering resulting from the remembrance of a particular set of experiences along the trail. Taken together, these narratives provide an understanding of the trailscape as a place shaped by multivocality.

*Representations* and *objects* are media that "possess commemorative functions," and are often employed in acts of remembering and forgetting (Van Dyke and Alcock 2003:5). In Chapter Three, I discussed the ways in which Salmon Pueblo's residents employed shell ornaments as items intended not only for personal adornment, but also for ceremonial activity. The great house occupants sealed offerings of shell beads, along with other valuable objects, within the pilasters of the Tower Kiva as part of a dedication of the structure. In this capacity, shell ornaments served as powerful objects that indefinitely confirmed the structure's ritual authority. The practice of sealing shell and other

important objects within pilasters also occurred at great house sites in Chaco Canyon.

Participation of Salmon residents in this activity signifies a shared understanding of the materiality of ceremonial practice that characterized the Chacoan ritual network.

Lastly, *places* are landscapes that are commemorated and inscribed with meaning, typically following the passing of an event. These include a variety of spaces including shrines, caves, monuments, buildings, or natural features (Van Dyke and Alcock 2003:5). In Chapter Two, I recognize the Natchitoches Trace as a place consisting of conflated and contested memories, contributing to the trailscape's multivocality. A portion of the trail is commemorated today as the Trail of Tears, or in Cherokee the *nunna daul tsuny*, "The Trail Where They Cried." In this way, memory of the trailscape is curated as a form of heritage. As demonstrated in Chapter Three, great houses and great kivas themselves function as places where a Chacoan identity is commemorated and reproduced through the association of material items with particular spaces (Van Dyke 2003). The inhabitants of Salmon Pueblo placed shell ornaments and other items within the Tower Kiva's pilasters, enacting on the memory of a place, Chaco Canyon, and of ceremonial activities that had been practiced within that place.

Ultimately, these papers highlight the intersections of archaeological landscapes, memory practices, and the referencing of particular people and places in the past. Both of these studies would benefit from additional research. Expanding the geographic scope of the study presented in Chapter Two would allow for an interesting comparison of trail use between the southeast Missouri region and other areas through which the Natchitoches Trace passed. Knowledge of the creation and utilization of the trail by precolumbian groups is limited and is worthy of deeper consideration. The concept of a trailscape and

its intersection with memory studies should be examined further in the evaluation of the creation, utilization, and memorialization of other trails. My interpretations of the shell distribution at Salmon Pueblo, presented in Chapter Three, would be made stronger through an examination of the shell distribution within the context of the entire ornament assemblage. Along with a fuller comparison to the ornament assemblage from other great houses and smaller sites, this would provide more significant insight into practices of personal adornment and differential trade networks in the Middle San Juan in the Pueblo III and Pueblo IV periods.



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APPENDIX A. All shell ornaments listed in SPARC and shell items analyzed at the Salmon Ruins Museum.

MUSEUM					STRATUM;	DEPTH (m	
SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	FEATURE	below datum)	PERIOD
SA130W063	1	unknown	Not analyzed; listed in SA table as an <i>Olivella</i> ornament	130W	C-2-39	10.25	Mixed Chacoan and San Juan
SA130W059	1	unknown	Not analyzed; listed in SA table as an <i>Olivella</i> ornament	130W	H-1.3-6.6	10.11	San Juan
OR80-000001-SSP	1	whole shell bead	<i>Olivella dama</i>	36W	C-3-5	3.55-3.65	Mixed Chacoan and San Juan
OR80-000002-SSP	1	whole shell bead	<i>Olivella cf. dama</i>	31W	C-4-9	6.34-6.40	Chacoan
OR80-000003-SSP	1	whole shell bead	<i>Olivella dama</i>	127W	F-1-4	5.71-5.81	Mixed Chacoan and San Juan
OR80-000004-SSP	1	whole shell bead	<i>Olivella dama</i>	93W	H-1-14	5.31-5.39	San Juan
OR80-000005-SSP	1	whole shell bead	<i>Olivella dama</i>	33B	B-2-6	3.17-3.25	San Juan
OR80-000006-SSP	1	bead	Not analyzed	93W	I-2-23	5.45-5.52	San Juan
OR80-000007-SSP	1	bead	Not analyzed	93W	C-9-12	5.07-5.16	San Juan
OR80-000008-SSP	1	barrel bead	<i>Olivella cf. dama</i>	62W	C-2.5-7.5	4.20-4.30	Mixed Chacoan and San Juan
OR80-000009-SSP	1	bead	Not analyzed	91W	C-5-19	4.32-4.86	Mixed Chacoan and San Juan
OR80-000010-SSP	1	whole shell bead	<i>Olivella dama</i>	129W	C-29-36	4.60-5.23	Mixed Chacoan and San Juan
OR80-000011-SSP	1	whole shell bead	<i>Olivella dama</i>	67W	F-1-4	4.50-4.60	Mixed Chacoan and San Juan
OR80-000012-SSP	1	whole shell bead	<i>Olivella cf. dama</i>	33W	F-4-15	6.58-6.68	Chacoan

MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
OR80-000013-SSP	1	whole shell bead	<i>Olivella dama</i>	20P	Q-2-4.5	6.98-7.13	Mixed Chacoan and San Juan
OR80-000014-SSP	1	whole shell bead	<i>Olivella dama</i>	67W	C-2-5	4.90-5.00	Mixed Chacoan and San Juan
OR80-000015-SSP	1	whole shell bead	<i>Olivella dama</i>	130W	X-2-8	10.16	San Juan
OR80-000016-SSP	1	whole shell bead	<i>Olivella dama</i>	130W	X-2-8	10.16	San Juan
OR80-000017-SSP	1	whole shell bead	<i>Olivella dama</i>	33W	F-4-15	6.42-6.51	Chacoan
OR80-000018-SSP	1	whole shell bead	<i>Olivella dama</i>	62W	C-25.5-25.5	5.12-5.14	Mixed Chacoan and San Juan
OR80-000019-SSP	1	whole shell bead	<i>Olivella dama</i>	93W	F-1-10	5.06-5.19	San Juan
OR80-000020-SSP	1	whole shell bead	<i>Olivella dama</i>	67W	C-4-10	5.86-6.02	Mixed Chacoan and San Juan
OR80-000021-SSP	1	whole shell bead	<i>Olivella dama</i>	37W	F-2-5	4.69-4.79	San Juan
OR80-000022-SSP	1	whole shell bead	<i>Olivella dama</i>	56W	C-1-3	5.75-5.95	Mixed Chacoan and San Juan
OR80-000023-SSP	1	whole shell bead	<i>Olivella dama</i>	11P	C-1-4	6.18-6.25	Mixed Chacoan and San Juan
OR80-000024-SSP	1	end-ground bead	<i>Olivella dama</i>	129W	C-28-35.9	4.32-4.39	Mixed Chacoan and San Juan
OR80-000025-SSP	1	whole shell bead	<i>Olivella dama</i>	no data	no data	no data	Unknown
OR80-000026-SSP	1	whole shell bead	<i>Olivella dama</i>	81W	C-4-9	5.74-5.84	Chacoan
OR80-000027-SSP	1	bead	Not analyzed	102A	P-0-0	no data	Unknown

MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
OR80-000028-SSP	1	whole shell bead	<i>Olivella dama</i>	58W	M-1-6	5.75-5.95	Mixed Chacoan and San Juan
OR80-000029-SSP	1	whole shell bead	<i>Olivella cf. dama</i>	30W	C-2-8	6.17-6.27	Chacoan
OR80-000030-SSP	1	barrel bead	<i>Olivella dama</i>	56W	F-1-4	5.97-6.02	Mixed Chacoan and San Juan
OR80-000031-SSP	1	whole shell bead	<i>Olivella dama</i>	56W	C-1-3	5.83-6.00	Mixed Chacoan and San Juan
OR80-000032-SSP	1	whole shell bead	<i>Olivella dama</i>	56W	C-1-3	5.83-6.00	Mixed Chacoan and San Juan
OR80-000033-SSP	1	bead	Not analyzed	56W	C-1-3	5.83-6.00	Mixed Chacoan and San Juan
OR80-000034-SSP	1	whole shell bead	<i>Olivella dama</i>	14P	C-1-4	7.70-7.79	San Juan
OR80-000035-SSP	1	bead	Not analyzed; Field notes on 7/8/1975 identify it as <i>Olivella</i> sp.	92W	L-2-11; Feature 33	6.10-6.20	Chacoan
OR80-000036-SSP	1	bead	Not analyzed	62W	C-2.5-7.5	3.86-4.30	Mixed Chacoan and San Juan
OR80-000037-SSP	1	bead	Not analyzed	14P	C-2-5	2.98-8.09	Chacoan
OR80-000038-SSP	1	bead	Not analyzed	33W	F-4-15	6.61-6.73	Chacoan
OR80-000039-SSP	1	bead	Not analyzed	93W	C-9-12	5.12-5.21	San Juan
OR80-000040-SSP	1	bead	Not analyzed	84W	C-1-5	5.30-5.70	Chacoan
OR80-000041-SSP	1	bead	Not analyzed	84W	H-1-8	5.79-5.89	Chacoan
OR80-000042-SSP	1	bead	Not analyzed	130W	F-1-3	9.79-9.88	San Juan
OR80-000043-SSP	1	bead	Not analyzed	11P	C-1-4	7.01-7.11	Mixed Chacoan and San Juan

MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
OR80-000044-SSP	1	disc bead	Marine shell	62W	C-2-7	4.41-4.50	Mixed Chacoan and San Juan
OR80-000045-SSP	1	bead	Not analyzed	100W	C-8-13	5.73-5.80	Chacoan
OR80-000046-SSP	1	bead	Not analyzed	91A	P-0-0	no data	Unknown
OR80-000047-SSP	1	bead	Not analyzed	62W	C-22-22	5.10-5.20	Mixed Chacoan and San Juan
OR80-000048-SSP	1	bead	Not analyzed	62W	no data	4.20-4.30	Unknown
OR80-000049-SSP	1	bead	Not analyzed	67W	C-4-10	6.08-6.18	Mixed Chacoan and San Juan
OR80-000050-SSP	1	bead	Not analyzed	67W	C-4-10	6.08-6.18	Mixed Chacoan and San Juan
OR80-000051-SSP	1	bead	Not analyzed	37W	C-2-8	6.15-6.25	San Juan
OR80-000052-SSP	1	bead	Not analyzed	127W	P-0-0	no data	Unknown
OR80-000053-SSP	1	bead	Not analyzed	129W	C-77-84	4.92-5.03	San Juan
OR80-000054-SSP	1	bead	Not analyzed	20P	B-1.5-2.5	7.08-7.09	San Juan
OR80-000055-SSP	1	bead	Not analyzed	127W	F-1-4	5.5	Mixed Chacoan and San Juan
OR80-000056-SSP	1	bead	Not analyzed	31W	G-1-10	6.50-6.57	Chacoan
OR80-000057-SSP	1	bead	Not analyzed	130W	P-0-0	10.20-10.23	Unknown
OR80-000058-SSP	1	bead	Not analyzed	129W	F-1-8	3.02-3.12	San Juan
OR80-000059-SSP	1	bead	Not analyzed	56W	C-1-3	5.82-5.99	Mixed Chacoan and San Juan
OR80-000060-SSP	1	bead	Not analyzed	37W	C-2-8	5.85-5.95	San Juan
OR80-000064-SSP	1	pendant	<i>Anodonta californiensis</i>	62W	C-23.3-23.3	4.60-4.88	Mixed Chacoan and San Juan
OR80-000074-SSP	1	bead	Not analyzed	94W	B-1-2	6.34	San Juan
OR80-000075-SSP	1	bead	Not analyzed	100W	C-3-6	4.85-4.95	Mixed Chacoan and San Juan

MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
OR80-000076-SSP	1	bead	Not analyzed	91A	C-2-14	3.59-4.11	San Juan
OR80-000078-SSP	1	bead	Not analyzed	101W	H-1-9	5.38	Chacoan
OR80-000079-SSP	1	bead	Not analyzed	56W	F-2-4.5	6.17	Chacoan
OR80-000093-SSP	1	bead	Not analyzed	36W	F-1-15	5.00-5.15	San Juan
OR80-000095-SSP	1	bead	Not analyzed	62W	C-2-7	4.20-4.30	Mixed Chacoan and San Juan
OR80-000096-SSP	1	bead	Not analyzed	90W	F-2-9	5.40-5.50	San Juan
OR80-000098-SSP	1	whole shell bead	<i>Olivella sp.</i>	90W	F-2-9	5.40-5.50	San Juan
OR80-000099-MSP (SA064W059)	1	whole shell bead	<i>Olivella dama</i>	64W	L-2-10; Feature 48	2.77-2.93	San Juan
OR80-000099-MSP (SA064W059)	1	bilobed bead	<i>Glycymeris sp.</i>	64W	L-2-10; Feature 48	2.77-2.93	San Juan
OR80-000099-MSP (SA064W059)	1	bilobed bead	cf. <i>Laevicardium sp.</i>	64W	L-2-10; Feature 48	2.77-2.93	San Juan
OR80-000099-MSP (SA064W059)	3	bilobed bead	Marine shell	64W	L-2-10; Feature 48	2.77-2.93	San Juan
OR80-000100-SSP	1	tinkler	<i>Conasprella ximenes</i>	93W	C-1-3	4.19-4.50	San Juan
OR80-000101-SSP	1	whole shell bead	<i>Olivella dama</i>	82W	L-1-7 Feature 3	4.20-4.48	San Juan
OR80-000102-SSP	1	saucer bead	<i>Olivella sp.</i>	20P	B-1.5-2.5	6.99-7.13	San Juan
OR80-000103-SSP	1	whole shell bead	<i>Olivella dama</i>	64W	F-1-6	3.00-3.60	San Juan
OR80-000104-SSP	1	disc bead	Marine shell	64W	F-1-6	2.50-2.60	San Juan
OR80-000105-SSP	1	pendant	<i>Anodonta californiensis</i>	8BW	C-3-5	5.57-5.67	Mixed Chacoan and San Juan
OR80-000106-SSP	1	pendant	<i>Haliotis cf. cracherodii</i>	11P	P-0-0	no data	Unknown
OR80-000107-SSP	1	pendant	<i>Pteria</i> or <i>Pinctada sp.</i>	36W	C-1-3	2.90-3.00	San Juan
OR80-000108-SSP							

MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
OR80-000110-SSP	1	pendant	Not analyzed	82W	C-8-20	5.87-6.04	Chacoan
OR80-000148-SSP (SA130W081)	1	bilobed bead	<i>Laevicardium sp.</i>	130W	L-3-12; Feature 4 and 30	10.80-10.95	Mixed Chacoan and San Juan
OR80-000151-MSP (SA064W051)	2	bilobed bead	Unknown	64W	L-2-10; Feature 47	2.73-3.00	San Juan
OR80-000152-MSP	2	bilobed bead	<i>Laevicardium sp.</i>	100W	N-1-3	4.95-5.05	Mixed Chacoan and San Juan
OR80-000155-SSP	1	whole shell bead	<i>Columbella sp.</i>	36W	C-2-4	3.20-3.25	San Juan
OR80-000158-SSP	1	whole shell bead	<i>Olivella biplicata</i>	33W	F-4-15	6.61-6.68	Chacoan
OR80-000192-SSP	1	disc bead	Marine shell	37W	C-3.5-11.5	6.00-6.18	Mixed Chacoan and San Juan
OR80-000265-SSP	1	unmodified (non-cultural)	<i>Succinea sp.</i>	129W	F-1-8	3.57-3.67	San Juan
OR80-000267-SSP	1	pendant	Marine shell	58W	I-1-9	6.18-6.29	San Juan
OR80-000268-SSP	1	unmodified (non-cultural)	<i>Succinea sp.</i>	62W	C-29-29	no data	San Juan
OR80-000270-SSP	1	other	Not analyzed	62A	I-2-6	3.89-3.91	San Juan
OR80-000271-SSP	1	whole shell bead	<i>Olivella dama</i>	33W	F-4-15	6.68-6.70	Chacoan
OR80-000271-SSP	1	unmodified (non-cultural)	<i>Sonorella sp.</i> or <i>Helisoma trivolvis</i>	33W	F-4-15	6.68-6.70	Chacoan
OR80-000273-SSP	1	unmodified (non-cultural)	<i>Succinea sp.</i>	62W	C-30-30	no data	Mixed Chacoan and San Juan

MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
OR80-000274-SSP	1	ring bead	<i>Lottia scutum</i>	no data	no data	no data	unknown
OR80-000275-SSP	1	unmodified (non-cultural)	<i>Helisoma sp.</i>	59W	C-1-4	1.60-1.70	San Juan
OR80-000276-SSP	1	whole shell bead	<i>Olivella cf. biplicata</i>	93W	F-1-10	5.27-5.37	San Juan
OR80-000277-SSP	1	other	Not analyzed	62W	C-2.2-7.2	4.00-4.10	San Juan
OR80-000279-SSP	1	pendant	Not analyzed	91W	C-7-21	5.17-5.54	Chacoan
OR80-000280-SSP	1	split drilled bead	<i>Olivella cf. biplicata</i>	37W	C-2-8	5.45-5.55	San Juan
OR80-000281-SSP	1	pendant	Unknown	93W	C-7-9	5.35-5.40	San Juan
OR80-000322-SSP	1	bracelet/ pendant	<i>Glycymeris gigantea</i>	91A	C-1-6	3.22-3.32	San Juan
OR80-000328-MSP (SA064W050)	9	bilobed bead	Unknown	64W	L-2-10; Feature 46	2.71-2.97	San Juan
OR80-000347-SSP	1	tubular bead	<i>Vermetidae sp.</i>	93W	L-12.2-47.2; Feature 47	5.92-6.47	Chacoan
OR80-000348-SSP	1	disc bead	Marine shell	14P	C-1-4	7.53-7.63	San Juan
OR80-000349-SSP	1	whole shell bead	<i>Olivella dama</i>	56W	C-1-3	5.82-5.92	Mixed Chacoan and San Juan
OR80-000353-SSP	1	bilobed bead	cf. <i>Glycymeris sp.</i>	102A	C-5-9	5.20-5.30	Chacoan
OR80-000359-SSP	1	bilobed bead	<i>Glycymeris sp.</i>	14P	C-1-4	7.63-7.73	San Juan
OR80-000360-SSP	1	bilobed bead	<i>Glycymeris sp.</i>	59W	C-3-6	1.90-2.00	San Juan
OR80-000361-SSP	1	bilobed bead	Marine shell	62W	C-22-22	4.90-5.10	Mixed Chacoan and San Juan
OR80-000363-SSP	1	bead	Not analyzed	101W	C-1-6	4.43-5.03	Mixed Chacoan and San Juan
OR80-000366-SSP	1	disc bead	Marine shell	128A	L-1-3; Feature 4	5.69-5.84	San Juan

MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
OR80-000371-SSP	1	disc bead	Marine shell	33W	P-0-0	no data	Unknown
OR80-000383-SSP	1	barrel bead	<i>Olivella cf. dama</i>	37W	C-2-8	5.55-5.65	San Juan
OR80-000385-SSP	1	other	Not analyzed	TT10	C-1-3	5.50-5.80	San Juan
OR80-000395-SSP	1	bracelet	cf. <i>Glycymeris sp.</i>	58W	C-1-10	6.28-6.32	Mixed Chacoan and San Juan
OR80-000397-SSP	1	bracelet	<i>Glycymeris sp.</i>	100W	C-11-16	5.52-5.90	Chacoan
OR80-000399-SSP	1	barrel bead	<i>Olivella dama</i>	119W	N-2-31	5.20-5.46	Chacoan
OR80-000412-SSP	1	pendant	<i>Turritella leucostoma</i>	30W	C-3-9	6.29-6.34	Chacoan
OR80-000413-SSP	1	unmodified (non-cultural)	<i>Succinea sp.</i>	14W	B-1-2	6.00-6.10	San Juan
OR80-000416-SSP	1	saucer bead	<i>Olivella biplicata</i>	62W	C-27-27	5.40-5.50	Mixed Chacoan and San Juan
OR80-000417-SSP	2	unmodified (non-cultural)	<i>Succinea sp.</i>	119W	N-2-31	5.37	Chacoan
OR80-000419-SSP	1	whole shell bead	<i>Olivella dama</i>	102C	I-2-30	5.73-5.74	Chacoan
OR80-000420-SSP	1	whole shell bead	<i>Olivella cf. dama</i>	130W	H-1.3-6.6	9.91-10.09	San Juan
OR80-000430-SSP	1	barrel bead	<i>Olivella dama</i>	129W	C-74.5-81.5	5.16-5.26	Chacoan
OR80-000568-SSP	1	barrel bead	<i>Olivella dama</i>	62W	C-4-9	4.70-4.80	San Juan
OR80-000569-MSP (SA064W049)	1	whole shell bead	<i>Olivella dama</i>	64W	H-1-8/L-2-10; Features 4, 45, 145	2.73-3.03	San Juan



MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
OR80-000569-MSP (SA064W049)	1	bilobed bead	cf. <i>Laevicardium sp.</i>	64W	H-1-8/L-2-10;	2.73-3.03	San Juan
					Features 4, 45, 145		
OR80-000569-MSP (SA064W049)	4	bilobed bead	Marine shell	64W	H-1-8/L-2-10;	2.73-3.03	San Juan
					Features 4, 45, 145		
OR80-000570-SSP (SA064W049)	1	bilobed bead	Marine shell	64W	H-1-8/L-2-10;	3.09	San Juan
					Features 4, 45, 145		
OR80-000571-SSP	1	barrel bead	<i>Olivella dama</i>	93W	C-7-9	4.94-5.04	San Juan
OR80-000572-MSP	2	inlay/mosaic piece	<i>Haliotis sp.</i>	129W	I-3.5-137.6	6.05-6.10	Chacoan
OR80-000597-MSP	1	unmodified (non-cultural)	<i>Sonorella sp.</i> or <i>Helisoma sp.</i>	130W	P-0-0	10.13-10.23	Unknown
OR80-000609-SSP	15	disc bead	Marine shell	no data	no data	no data	Unknown
OR80-000628-SSP	1	pendant	Not analyzed	37W	C-5-12	6.30-6.39	Mixed Chacoan and San Juan
OR80-000717-MSP (SA064W087)	1	bilobed bead	cf. <i>Glycymeris sp.</i>	64W	L-2-10;	3.03	San Juan
					Feature 8		
OR80-000717-MSP (SA064W087)	4	bilobed bead	Marine shell	64W	L-2-10;	3.03	San Juan
					Feature 8		
OR80-000718-SSP	1	whole shell bead	<i>Olivella dama</i>	30B	G-1-4	no data	San Juan
OR80-000719-SSP	1	whole shell bead	<i>Olivella sp.</i>	63W	F-0-0	3.40-3.70	Chacoan

MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
OR80-000720-SSP	1	whole shell bead	<i>Olivella dama</i>	93W	F-1-10	4.85-4.93	San Juan
OR80-000721-SSP	1	whole shell bead	<i>Olivella dama</i>	62A	F-1-4	3.40-3.70	San Juan
OR80-000722-SSP	1	whole shell bead	<i>Olivella dama</i>	121A	G-1-3	5.60-5.90	San Juan
OR80-000723-MSP	1	pendant?	<i>Anodonta californiensis</i>	123A	C-1-4	5.35-5.49	San Juan
OR80-000865-SSP	1	unmodified (non-cultural)	<i>Succinea sp.</i>	89W	B-2-4	4.00-4.35	Mixed Chacoan and San Juan
OR80-001051-SSP	1	saucer bead	<i>Olivella cf. biplicata</i>	100W	C-3-6	5.10-5.27	Mixed Chacoan and San Juan
10?	1	barrel bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
6?	1	barrel bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
9?	1	barrel bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
9?-2	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
A	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
B	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
C	1	whole shell bead	<i>Olivella cf. dama</i>	Unknown	Unknown	Unknown	Unknown
D	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
E	1	barrel bead	<i>Olivella biplicata</i>	Unknown	Unknown	Unknown	Unknown
F	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown

<b>MUSEUM SPECIMEN NO</b>	<b>COUNT</b>	<b>ITEM</b>	<b>SPECIES</b>	<b>ROOM</b>	<b>STRATUM; FEATURE</b>	<b>DEPTH (m below datum)</b>	<b>PERIOD</b>
G	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
H	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
I	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
J	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
K	1	barrel bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
L	1	end-ground bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
M	1	cap bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
N	1	end-ground bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
O	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
P	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
Q	1	end-ground bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
R	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
S	1	end-ground bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
T	1	end-ground bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
U	1	barrel bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
V	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown

MUSEUM SPECIMEN NO	COUNT	ITEM	SPECIES	ROOM	STRATUM; FEATURE	DEPTH (m below datum)	PERIOD
W	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
X	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
Y	1	end-ground bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
Z	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
Unknown-1	1	pendant	cf. <i>Anomia peruviana</i>	Unknown	Unknown	Unknown	Unknown
Unknown-2	1	bilobed bead	Marine shell	Unknown	Unknown	Unknown	Unknown
Unknown-3	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
Unknown-4	1	whole shell bead	<i>Olivella cf. dama</i>	Unknown	Unknown	Unknown	Unknown
Unknown-5	1	disc bead	Marine shell	Unknown	Unknown	Unknown	Unknown
Unknown-6	1	disc bead	Marine shell	Unknown	Unknown	Unknown	Unknown
Unknown-7	1	disc bead	Marine shell	Unknown	Unknown	Unknown	Unknown
Unknown-8	94	disc bead	Marine shell	Unknown	Unknown	Unknown	Unknown
Unknown-9	1	pendant	<i>Haliotis rufescens</i>	Unknown	Unknown	Unknown	Unknown
Unknown-10	1	bracelet/ pendant	cf. <i>Glycymeris sp.</i>	Unknown	Unknown	Unknown	Unknown
Unknown-11	2	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Unknown	Unknown
<b>Total</b>	<b>318</b>						

APPENDIX B. Shell specimens analyzed at the Salmon Ruins Museum.

<b>MUSEUM</b>						
<b>SPECIMEN NO.</b>	<b>COUNT</b>	<b>ITEM</b>	<b>SPECIES</b>	<b>ROOM</b>	<b>PERIOD</b>	<b>ANALYSIS NOTES</b>
OR80-000001-SSP	1	whole shell bead	<i>Olivella dama</i>	36W	Mixed Chacoan and San Juan	Apex was punched off then abraded. Some wear on lip and part of apex. L: 14.00 mm.
OR80-000002-SSP	1	whole shell bead	<i>Olivella cf. dama</i>	31W	Chacoan	Incomplete from breakage. Chalky surface. L: 12.0 mm.
OR80-000003-SSP	1	whole shell bead	<i>Olivella dama</i>	127W	Mixed Chacoan and San Juan	Ground apex. No faceting, although apex is smoothed from wear. L: 12.0 mm.
OR80-000004-SSP	1	whole shell bead	<i>Olivella dama</i>	93W	San Juan	Slightly ground on sides. Chalky surface. L: 14.9 mm.
OR80-000005-SSP	1	whole shell bead	<i>Olivella dama</i>	33B	San Juan	Incomplete from breakage. Apex was punched off. Chalky surface. L: 10.2 mm.
OR80-000008-SSP	1	barrel bead	<i>Olivella cf. dama</i>	62W	Mixed Chacoan and San Juan	Flatened face. L: 5.5 mm.
OR80-000010-SSP	1	whole shell bead	<i>Olivella dama</i>	129W	Mixed Chacoan and San Juan	Apex was ground then broken. L: 12.0 mm.
OR80-000011-SSP	1	whole shell bead	<i>Olivella dama</i>	67W	Mixed Chacoan and San Juan	Faceting on 3 sides indicates heavy wear. L: 14.2 mm.
OR80-000012-SSP	1	whole shell bead	<i>Olivella cf. dama</i>	33W	Chacoan	Incomplete from breakage. Callus is obscured due to weathering. Chalky surface. L: 12.7 mm.
OR80-000013-SSP	1	whole shell bead	<i>Olivella dama</i>	20P	Mixed Chacoan and San Juan	Spire was punched off through indirect percussion. L: 12.4 mm.
OR80-000014-SSP	1	whole shell bead	<i>Olivella dama</i>	67W	Mixed Chacoan and San Juan	Faceting on 3 sides indicates heavy wear. L: 13.7 mm.

<b>MUSEUM</b>						
<b>SPECIMEN NO.</b>	<b>COUNT</b>	<b>ITEM</b>	<b>SPECIES</b>	<b>ROOM</b>	<b>PERIOD</b>	<b>ANALYSIS NOTES</b>
OR80-000015-SSP	1	whole shell bead	<i>Olivella dama</i>	130W	San Juan	Apex was ground. Faceting on the side, face, and notch on spire indicates heavy wear. L: 12.6 mm
OR80-000016-SSP	1	whole shell bead	<i>Olivella dama</i>	130W	San Juan	Highly polished notch. L: 13.0 mm.
OR80-000017-SSP	1	whole shell bead	<i>Olivella dama</i>	33W	Chacoan	Apex was ground. L: 11.5 mm.
OR80-000018-SSP	1	whole shell bead	<i>Olivella dama</i>	62W	Mixed Chacoan and San Juan	Apex was ground. Slight faceting. L: 12.8 mm.
OR80-000019-SSP	1	whole shell bead	<i>Olivella dama</i>	93W	San Juan	Apex was ground. L: 13.5 mm.
OR80-000020-SSP	1	whole shell bead	<i>Olivella dama</i>	67W	Mixed Chacoan and San Juan	Apex was punched off. L: 13.4 mm.
OR80-000021-SSP	1	whole shell bead	<i>Olivella dama</i>	37W	San Juan	Apex was ground. L: 13.9 mm.
OR80-000022-SSP	1	whole shell bead	<i>Olivella dama</i>	56W	Mixed Chacoan and San Juan	Apex was ground. The broken outer lip was ground. L: 16.6 mm.
OR80-000023-SSP	1	whole shell bead	<i>Olivella dama</i>	11P	Mixed Chacoan and San Juan	Spire was ground. Notch on outer lip from wear. L: 12.3 mm.
OR80-000024-SSP	1	end-ground bead	<i>Olivella dama</i>	129W	Mixed Chacoan and San Juan	Type B2 End-Ground bead after Milliken and Schwitalla (2012:21). Spire is broken off by impact. Face is polished but no clear facets. L: 6.9 mm.
OR80-000025-SSP	1	whole shell bead	<i>Olivella dama</i>	no data	Unknown	Apex was punched off. Outer lip is broken off but wear pattern indicates it continued to be used. Heavy wear at bottom of canal and on front. L: 14.3 mm.

MUSEUM						
SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
OR80-000026-SSP	1	whole shell bead	<i>Olivella dama</i>	81W	Chacoan	Highly faceted. Heavily worn following breakage. L: 16.0 mm.
OR80-000028-SSP	1	whole shell bead	<i>Olivella dama</i>	58W	Mixed Chacoan and San Juan	Apex was ground. Outer lip is chipped at the top with some wear. Flattened on one edge. L: 15.5 mm.
OR80-000029-SSP	1	whole shell bead	<i>Olivella cf. dama</i>	30W	Chacoan	Apex was punched off. Faceting on two sides. L: 14.0 mm.
OR80-000030-SSP	1	barrel bead	<i>Olivella dama</i>	56W	Mixed Chacoan and San Juan	Type B3a Barrel bead after Milliken and Schwitalla (2012:21-22). Both ends were ground with aperture almost completely absent. The suture is very dark and may have been rubbed with black pigment. L: 6.4 mm.
OR80-000031-SSP	1	whole shell bead	<i>Olivella dama</i>	56W	Mixed Chacoan and San Juan	Apex was punched off. Exhibits fine cracking along body due to heat stress. L: 12.7 mm.
OR80-000032-SSP	1	whole shell bead	<i>Olivella dama</i>	56W	Mixed Chacoan and San Juan	Faceting on 3 sides indicates heavy wear. L: 12.9 mm.
OR80-000034-SSP	1	whole shell bead	<i>Olivella dama</i>	14P	San Juan	Apex was ground. L: 14.1 mm.
OR80-000044-SSP	1	disc bead	Marine shell	62W	Mixed Chacoan and San Juan	D: 4.0 mm.
OR80-000064-SSP	1	pendant	<i>Anodonta californiensis</i>	62W	Mixed Chacoan and San Juan	Freshwater species. Non-uniform tab shape with rounded corners. Likely carved on-site while still green in color. 17.0 mm x 9.1 mm (at perforation) and 12.8 mm (at widest portion).

MUSEUM						
SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
OR80-000098-SSP (SA064W059)	1	whole shell bead		90W	San Juan	L: 6.9 mm. Additional perforation in center of body on lip opening side. L: 16.9 mm.
OR80-000099-MSP (SA064W059)	1	bilobed bead	<i>Glycymeris</i> sp.	64W	San Juan	99-5: Burned. Drilling was started on one side, then switched to the other. L: 7.2 mm.
OR80-000099-MSP (SA064W059)	1	bilobed bead	cf. <i>Laevicardium</i> sp.	64W	San Juan	99-3: Burned. L: 7.0 mm.
OR80-000099-MSP (SA064W059)	3	bilobed bead	Marine shell	64W	San Juan	All are burned. 99-2: Unidentified marine bivalve. L: 7.0 mm. 99-4: Unidentified marine bivalve. L: 7.1 mm. 99-6: Unidentified marine bivalve. L: 6.8 mm.
OR80-000100-SSP	1	tinkler	<i>Conasprella ximenes</i>	93W	San Juan	Cut a groove and drilled a hole through the top. Species ID after Keen (1971:669). L: 19.2 mm.
OR80-000101-SSP	1	whole shell bead	<i>Olivella dama</i>	82W	San Juan	Burned. Apex was ground. L: 12.5 mm.
OR80-000102-SSP	1	saucer bead	<i>Olivella</i> sp.	20P	San Juan	Type G2a Small Normal Saucer bead from Milliken and Schwitalla (2012:51). Cut from the side wall.
OR80-000103-SSP	1	whole shell bead	<i>Olivella dama</i>	64W	San Juan	Burned. Apex was ground. L: 14.9 mm.
OR80-000104-SSP	1	disc bead	Marine shell	64W	San Juan	Burned. Unidentified marine bivalve. D: 5.1 mm.



MUSEUM SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
OR80-000105-SSP	1	pendant	<i>Anodonta californiensis</i>	8BW	Mixed Chacoan and San Juan	Freshwater species. Tab pendant with rounded corners and small perforation at narrowest end. Highly worn on side and top of perforation. 12.6 mm x 9 mm (narrow end) and 12 mm (larger end).
OR80-000106-SSP	1	pendant	<i>Haliotis cf. cracherodii</i>	11P	Unknown	Possibly black abalone shell. Irregular-shaped pendant. Broken, with small perforation. 10.3 mm x 7.2 mm (widest end) and 7.8 (narrowest portion below perforation).
OR80-000107-SSP OR80-000108-SSP	1	pendant	cf. <i>Pinctada</i> sp.	36W	San Juan	Trapezoidal tab pendant with rounded corners. Broken at top near perforation. Small amount of cortex remaining. 11.9 mm x 10.5 mm (widest end) and 7.8 mm (narrowest portion below perforation). OR80-000108-SSP is a layer that has broken off of OR80-000107-SSP. 11.4 mm at longest portion.
OR80-000148-SSP (SA130W081)	1	bilobed bead	<i>Laevicardium</i> sp.	130W	Mixed Chacoan and San Juan	Drilled perforation. Chalky surface. L: 8.5 mm.
OR80-000151-MSP (SA064W051)	2	bilobed bead	Unknown	64W	San Juan	One complete bead and 3 other fragments, represented an MNI of 2. Chalky surface from burning. L: 8.4 mm.
OR80-000152-MSP	2	bilobed bead	<i>Laevicardium</i> sp.	100W	Mixed Chacoan and San Juan	Some wear around perforation. Heat or weathering is causing them to expand and break apart. 152-1: L: 9.5 mm. 152-2: L: 10.1 mm, Th: 4.4 mm.

MUSEUM						
SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
OR80-000155-SSP	1	whole shell bead	<i>Columbella</i> sp.	36W	San Juan	Burned. Outer lip was broken off, and the polish indicates it was repaired. Broken in 4 pieces. Largest piece measures 12.5 mm.
OR80-000158-SSP	1	whole shell bead	<i>Olivella biplicata</i>	33W	Chacoan	Apex was punched off. Chalky surface. L: 15.8 mm.
OR80-000192-SSP	1	disc bead	Marine shell	37W	Mixed Chacoan and San Juan	Heavily rounded edges indicate a very long use-life. Biconically drilled. D: 8.2 mm.
OR80-000265-SSP	1	unmodified (non-cultural)	<i>Succinea</i> sp.	129W	San Juan	Land snail. Incidental to assemblage. Black color indicates it was burned. L: 8.8 mm.
OR80-000267-SSP	1	pendant	Marine shell	58W	San Juan	Unidentified marine nacreous shell ground on 3 edges. 11.4 mm x 4.2 mm.
OR80-000268-SSP	1	unmodified (non-cultural)	<i>Succinea</i> sp.	62W	San Juan	Land snail. Incidental to assemblage. 7.4 mm x 5.5 mm.
OR80-000271-SSP	1	whole shell bead	<i>Olivella dama</i>	33W	Chacoan	271-1: Incomplete from breakage. Chalky, brown surface. L: 10.7 mm.
	1	unmodified (non-cultural)	<i>Sonorella</i> sp. or <i>Helisoma trivolvis</i>	33W	Chacoan	271-2: Incidental to assemblage. L: 10.9 mm.
OR80-000273-SSP	1	unmodified (non-cultural)	<i>Succinea</i> sp.	62W	Mixed Chacoan and San Juan	Land snail. Incidental to assemblage. L: 7.5 mm.
OR80-000274-SSP	1	ring bead	<i>Lottia scutum</i>	no data	unknown	Perforated oval ring bead. Species ID from Audubon guide (2017:363). 12.9 mm x 10.3 mm.
OR80-000275-SSP	1	unmodified (non-cultural)	<i>Helisoma</i> sp.	59W	San Juan	Incidental to assemblage.

<b>MUSEUM</b>						
<b>SPECIMEN NO.</b>	<b>COUNT</b>	<b>ITEM</b>	<b>SPECIES</b>	<b>ROOM</b>	<b>PERIOD</b>	<b>ANALYSIS NOTES</b>
OR80-000276-SSP	1	whole shell bead	<i>Olivella cf. biplicata</i>	93W	San Juan	Fragment from the base of a whole shell bead. L: 11.9 mm.
OR80-000280-SSP	1	split drilled bead	<i>Olivella cf. biplicata</i>	37W	San Juan	Type C2 Split-Drilled bead from Milliken and Schwitalla (2012:25). Incomplete from breakage. Some wear along perforation. L: 14.6 mm.
OR80-000281-SSP	1	pendant	Unknown	93W	San Juan	Very small fragment. Break goes through the drilled perforation. Unclear whether the species is freshwater or marine nacreous shell. L: 4.6 mm.
OR80-000322-SSP	1	bracelet/pendant	<i>Glycymeris gigantea</i>	91A	San Juan	Originally a Type 2 bracelet that was reworked into a pendant with a ground perforation. L: 48.8 mm, Th: 4.1 x 3.6 mm.
OR80-000328-MSP (SA064W050)	9	bilobed bead	Unknown	64W	San Juan	All are extremely burned and beginning to lose their integrity. 328-1: L: 7.5 mm. 328-2: L: 6.7 mm. 328-3: L: 6.8 mm. 328-4: L: 7.0 mm. 328-5: L: 7.1 mm. 328-6: L: 7.1 mm. 328-7: L: 6.9 mm. 328-8: Incomplete from breakage. L: 5.5 mm. 328-9: Incomplete from breakage. L: 5.6 mm.
OR80-000347-SSP	1	tubular bead	<i>Vermetidae</i> sp.	93W	Chacoan	Chalky surface. L: 10.2-12.2 mm. D: 4.9 mm.
OR80-000348-SSP	1	disc bead	Marine shell	14P	San Juan	Unidentified white marine bivalve. Biconically drilled. L: 7.0 mm.
OR80-000349-SSP	1	whole shell bead	<i>Olivella dama</i>	56W	Mixed Chacoan and San Juan	Apex was punched off. Faceted on one side from heavy wear. L: 13.2 mm.

MUSEUM						
SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
OR80-000353-SSP	1	bilobed bead	cf. <i>Glycymeris</i> sp.	102A	Chacoan	Drilled perforation. Additional drilled attempt on other end does not perforate. Possibly added pigment into the ground grooves on the side. Chalky surface. L: 6.2 mm.
OR80-000359-SSP	1	bilobed bead	<i>Glycymeris</i> sp.	14P	San Juan	Possibly cut from the upper back of the shell. 8.3 mm x 4.5 mm at widest portion.
OR80-000360-SSP	1	bilobed bead	<i>Glycymeris</i> sp.	59W	San Juan	L: 8.6 mm.
OR80-000361-SSP	1	bilobed bead	Marine shell	62W	Mixed Chacoan and San Juan	White marine shell. Possibly a mussel scar on one side. No ribbing is present. L: 8.4 mm.
OR80-000366-SSP	1	disc bead	Marine shell	128A	San Juan	Unknown white marine shell species. Drilled perforation. Chalky surface. D: 3.4 mm.
OR80-000371-SSP	1	disc bead	Marine shell	33W	Unknown	Unknown white marine shell species. Uniconically drilled. D: 3.1 mm.
OR80-000383-SSP	1	barrel bead	<i>Olivella</i> cf. <i>dama</i>	37W	San Juan	Type B3a Barrel bead from Milliken and Schwitalla (2012:21-22). Highly worn. L: 5.9 mm.
OR80-000395-SSP	1	bracelet	cf. <i>Glycymeris</i> sp.	58W	Mixed Chacoan and San Juan	Taxodontic plate was ground. The umbo was highlighted by grinding on the sides, but mostly retains its natural shape. The perforation was drilled.
OR80-000397-SSP	1	bracelet	<i>Glycymeris</i> sp.	100W	Chacoan	Double-faceted profile from ground edges. 26.3 mm x 4.4 mm, Th: 3.5 mm.
OR80-000399-SSP	1	barrel bead	<i>Olivella dama</i>	119W	Chacoan	Originally a whole shell bead that was reworked into a barrel bead upon breakage. L: 7.7 mm.

MUSEUM						
SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
OR80-000412-SSP	1	pendant	<i>Turritella leucostoma</i>	30W	Chacoan	Fragment with a ridged exterior. Form is uncertain, although the species indicates it is likely from a whole shell pendant. Species ID from Keen (1971:392).
OR80-000413-SSP	1	unmodified (non-cultural)	<i>Succinea</i> sp.	14W	San Juan	Land snail. Incidental to assemblage. L: 7.5 mm.
OR80-000416-SSP	1	saucer bead	<i>Olivella biplicata</i>	62W	Mixed Chacoan and San Juan	Type G5 Oval Saucer bead from Milliken and Schwitalla (2012:54-55). Perforation in center. High degree of wear on two sides of perforation indicates it was sewn onto clothing. Some wear on a third side indicates something might have been hanging from it. 9.0 mm x 7.2 mm.
OR80-000417-SSP	2	unmodified (non-cultural)	<i>Succinea</i> sp.	119W	Chacoan	Land snail. Incidental to assemblage.
OR80-000419-SSP	1	whole shell bead	<i>Olivella dama</i>	102C	Chacoan	L: 14.2 mm.
OR80-000420-SSP	1	whole shell bead	<i>Olivella</i> cf. <i>dama</i>	130W	San Juan	L: 18.4 mm.
OR80-000430-SSP	1	barrel bead	<i>Olivella dama</i>	129W	Chacoan	Darker color due to weathering. L: 8.5 mm.
OR80-000568-SSP	1	barrel bead	<i>Olivella dama</i>	62W	San Juan	Brown in color. L: 6.2 mm.
OR80-000569-MSP (SA064W049)	1	whole shell bead	<i>Olivella dama</i>	64W	San Juan	569-1: Burned. Apex was ground. L: 16.5 mm.
OR80-000569-MSP (SA064W049)	1	bilobed bead	cf. <i>Laevicardium</i> sp.	64W	San Juan	569-2: Burned. Possibly <i>Laevicardium</i> .

<b>MUSEUM</b>						
<b>SPECIMEN NO.</b>	<b>COUNT</b>	<b>ITEM</b>	<b>SPECIES</b>	<b>ROOM</b>	<b>PERIOD</b>	<b>ANALYSIS NOTES</b>
OR80-000569-MSP (SA064W049)	4	bilobed bead	Marine shell	64W	San Juan	569-3 - 569-6: All are burned. Unidentified white marine shell.
OR80-000570-SSP (SA064W049)	1	bilobed bead	Marine shell	64W	San Juan	Burned. L: 7.0 mm.
OR80-000571-SSP	1	barrel bead	<i>Olivella dama</i>	93W	San Juan	Front face has been flattened. Some vestiges of original coloration. L: 7.9 mm.
OR80-000572-MSP	2	inlay/mosaic piece	<i>Haliotis</i> sp.	129W	Chacoan	Either red or green abalone shell. Rectangular in shape, with one edge slightly beveled going inwards towards exterior surface. Likely not from the same valve, as one has water damage on interior and the other does not.
OR80-000597-MSP	1	unmodified (non-cultural)	<i>Sonorella</i> sp. or <i>Helisoma</i> sp.	130W	Unknown	Many small shell fragments from an unknown number of specimens. Probably incidental to assemblage.

MUSEUM						
SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
OR80-000609-SSP	15	disc bead	White marine shell	no datano data	Unknown	Six are burned. 609-1: Th: 1.1 mm, D: 3.5 mm. 609-2: 3.26 mm x 3.75 mm, Th: 1.00 mm. 609-3: 3.99 mm x 3.28 mm, Th: 1.1-1.9 mm. 609-4: 3.70 mm x 3.39 mm, Th: 1.6mm - 2.0 mm. 609-5: 3.58 mm x 3.36 mm, Th: 1.99 mm. 609-6: 4 fragments, may represent one bead. 609-7: 3.90 mm x 3.34 mm, Th: 1.0-1.4 mm. 609-8: 3.60 mm x 3.42 mm x 2.36 mm, Th: 1.1-2.0 mm. 609-9: 3.62 mm x 3.36 mm, Th: 1.94 mm. 609-10: 3.68 mm x 3.46 mm, Th: 2.01 mm. 609-11: 3.52 mm x 3.28 mm, Th: 2.12 mm. 609-12: 3.67 mm x 3.37 mm, Th: 2.37 mm. 609-13: 3.67 mm x 3.28 mm, Th: 2.13 mm. 609-14: 3.75 mm x 3.34 mm, Th: 1.56 mm.
OR80-000717-MSP (SA064W087)	1	bilobed bead	cf. <i>Glycymeris</i> sp.	64W	San Juan	717-1: Burned. Possibly Glycymeris.
OR80-000717-MSP (SA064W087)	4	bilobed bead	Marine shell	64W	San Juan	717-2 - 717-5: Burned. Unidentified white marine shell.
OR80-000718-SSP	1	whole shell bead	<i>Olivella dama</i>	30B	San Juan	L: 12.9 mm.
OR80-000719-SSP	1	whole shell bead	<i>Olivella</i> sp.	63W	Chacoan	Outer lip was broken away and polished. L: 9.9 mm.
OR80-000720-SSP	1	whole shell bead	<i>Olivella dama</i>	93W	San Juan	Two sides and notch have worn facets, but the back is natural. L: 13.2 mm.
OR80-000721-SSP	1	whole shell bead	<i>Olivella dama</i>	62A	San Juan	Faceting on side opposite aperture. L: 14.6 mm.

MUSEUM						
SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
OR80-000722-SSP	1	whole shell bead	<i>Olivella dama</i>	121A	San Juan	Apex was broken off. Some faceting on 2 sides. L: 12.7 mm.
OR80-000723-MSP	1	pendant?	<i>Anodonta californiensis</i>	123A	San Juan	Fresh breaks along the edges, including the notch. Two fragments, probably from a pendant.
OR80-000865-SSP	1	unmodified (non-cultural)	<i>Succinea</i> sp.	89W	Mixed Chacoan and San Juan	Land snail. Incidental to assemblage. L: 9.6 mm.
OR80-001051-SSP	1	saucer bead	<i>Olivella</i> cf. <i>biplicata</i>	100W	Mixed Chacoan and San Juan	Type G4 Ground Saucer bead from Milliken and Schwitalla (2012:54). Side-walled saucer ground on both sides. D: 6.7 mm.
10?	1	barrel bead	<i>Olivella dama</i>	Unknown	Unknown	Front has been worn flat. L: 4.7 mm.
6?	1	barrel bead	<i>Olivella dama</i>	Unknown	Unknown	Front has been worn flat. L: 5.5 mm.
9?	1	barrel bead	<i>Olivella dama</i>	Unknown	Unknown	L: 5.8-6.2 mm.
9?-2	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Entire spire is gone. Highly weathered. L: 13.3 mm.
A	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was broken off. Polish on the front but no faceting. L: 14.4 mm.
B	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was ground. Slightly truncated. Highly faceted on the front. L: 14.1 mm.
C	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Upper half of spire was busted off. Chalky surface. L: 12.9 mm.
D	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was ground. One side has high degree of polish. L: 12.1 mm.
E	1	barrel bead	<i>Olivella biplicata</i>	Unknown	Unknown	Top and bottom were ground off. L: 8.0 mm.
F	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Brown in color. L: 11.5 mm.



<b>MUSEUM</b>						
<b>SPECIMEN NO.</b>	<b>COUNT</b>	<b>ITEM</b>	<b>SPECIES</b>	<b>ROOM</b>	<b>PERIOD</b>	<b>ANALYSIS NOTES</b>
G	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Brown in color. L: 11.3 mm.
H	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was ground. Some wear on the face. L: 13.3 mm.
I	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was punched off. Some wear on the face. Chalky surface. L: 13.1 mm.
J	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was ground. Some wear on the front. Vestiges of original coloration. Evidence of black pigment. L: 14.8 mm.
K	1	barrell bead	<i>Olivella dama</i>	Unknown	Unknown	Spire was broken off. Brown in color. L: 7.0 mm.
L	1	end-ground bead	<i>Olivella dama</i>	Unknown	Unknown	Type B2 End-Ground bead from Milliken and Schwitalla (2012:21). Apex was busted off then smoothed down (small impact notch visible). L: 11.5 mm.
M	1	cap bead	<i>Olivella dama</i>	Unknown	Unknown	Type B4 Cap bead from Milliken and Schwitalla (2012:22-23). Apex was busted off then smoothed down. Outer lip is busted back. L: 6.3 mm.
N	1	cap bead	<i>Olivella dama</i>	Unknown	Unknown	Type B2 End-Ground bead from Milliken and Schwitalla (2012:21). Apex was ground. Front is heavily polished. L: 6.3 mm.
O	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was ground. Some polish on the front. L: 12.3 mm.
P	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was broken off. Front is worn very smooth. L: 11.4 mm.

MUSEUM SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
Q	1	cap bead	<i>Olivella dama</i>	Unknown	Unknown	Type B2 End-Ground bead from Milliken and Schwitalla (2012:21). Apex was ground. The interior is ground up to the canal. High polish with slight facet on front. L: 6.9 mm.
R	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was ground. High polish with slight facet on front. L: 11.6 mm.
S	1	cap bead	<i>Olivella dama</i>	Unknown	Unknown	Type B2 End-Ground bead from Milliken and Schwitalla (2012:21). Apex was busted off. Body whorl was reduced almost up to the canal. Highly polished. L: 6.7 mm.
T	1	cap bead	<i>Olivella dama</i>	Unknown	Unknown	Type B2 End-Ground bead from Milliken and Schwitalla (2012:21). Apex was broken off then finished. Back end was ground down almost to the top of the aperture. Heavy wear on back. L: 6.4 mm.
U	1	barrel bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was broken. Front has high polish and a formal grinding facet. L: 9.1 mm.
V	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was punched off. Highly polished and smoothed over. L: 11.1 mm.
W	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was busted off. Very weathered and pitted. L: 11.0 mm.
X	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was broken off. Missing almost all of the outer lip. The front is polished and worn very smooth. L: 11.3 mm.

MUSEUM SPECIMEN NO.	COUNT	ITEM	SPECIES	ROOM	PERIOD	ANALYSIS NOTES
Y	1	cap bead	<i>Olivella dama</i>	Unknown	Unknown	Type B2 End-Ground bead from Milliken and Schwitalla (2012:21). Entire spire was broken off by impact. Front face is worn and smooth. L: 8.0 mm.
Z	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was ground. Front is heavily polished with faceting on outer lip. L: 15.4 mm.
Unknown-1	1	pendant	<i>Anomia peruviana</i>	Unknown	Unknown	Broken. Edge is serrated with other edge flattened in the "sunburst" style. Not labeled. 12.7 mm x 11.4 mm max width x 7.4 mm min width, Th: 0.6 mm.
Unknown-2	1	bilobed bead	Unknown	Unknown	Unknown	Label is unreadable. Species is unknown.
Unknown-3	1	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was busted off by impact. Front face has polish. L: 14.0 mm.
Unknown-4	1	whole shell bead	<i>Olivella cf. dama</i>	Unknown	Unknown	Label is unreadable.
Unknown-5	1	disc bead	White marine shell	Unknown	Unknown	Unidentified white marine shell. D: 3.3 mm.
Unknown-6	1	disc bead	White marine bivalve shell	Unknown	Unknown	Unidentified white marine bivalve. D: 3.5 mm.
Unknown-7	1	disc bead	White marine shell	Unknown	Unknown	Unidentified white marine shell. D: 3.0 mm.
Unknown-8	94	disc bead	White marine shell	Unknown	Unknown	Unidentified white marine shell. Beads have no label. One bead is represented by 2 fragments.
Unknown-9	1	pendant	Red Abalone ( <i>Haliotis rufescens</i> )	Unknown	Unknown	Irregular shaped pendant. The perforation is a natural worm hole, although exhibits some wear. 45.9 mm x 32.5 mm (widest end) and 16.1 (narrow end).

<b>MUSEUM</b>						
<b>SPECIMEN NO.</b>	<b>COUNT</b>	<b>ITEM</b>	<b>SPECIES</b>	<b>ROOM</b>	<b>PERIOD</b>	<b>ANALYSIS NOTES</b>
Unknown-10	1	bracelet/ pendant	cf. <i>Glycymeris</i>	Unknown	Unknown	Originally a bracelet that was reworked into a crescent-shaped pendant. Perforation is larger than average. Taxodontic plate was ground flat. 49.8 mm max length, 13.0 mm from top of umbo, 4.0 diameter of perforation.
Unknown-11	2	whole shell bead	<i>Olivella dama</i>	Unknown	Unknown	Apex was ground. Unreadable label.
<b>Total</b>	<b>271</b>					