CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

Tongva Ritual Practice on San Clemente Island: Exploring the Origins of the Chinigchinich Religion

A thesis submitted in partial fulfillment of the requirements

For the degree of Master of Arts in Anthropology

By

Elisabeth A. Rareshide

May 2016

The thesis of Elisabeth Rareshide is approved:

______________________________________ ___________________
Dr. Matthew Des Lauriers Date

______________________________________ ___________________
Dr. Sabina Magliocco Date

______________________________________ ___________________
Dr. James Snead, Chair Date

California State University, Northridge

ACKNOWLEDGEMENTS

Many people helped me in the process of researching and writing this thesis. I thank my thesis committee for their constant support and patience with my writing process. Thank you to my advisor, James Snead, for being the Virgil for my Dante. From the beginning, you have understood my long-term goals and guided me through the necessary steps to reach those goals. Thank you to Matthew Des Lauriers for challenging me. Through our debates and your constant questioning of my assumptions, you have helped make me a stronger scholar. Thank you to Sabina Magliocco for empowering my understanding and application of anthropological theory and for nurturing my interest in teaching. You are the model for the type of teacher I hope to become. Any mistakes or errors of judgment in my thesis are my responsibility and do not reflect the mentorship of my committee.

John Foster frequently enjoyed telling me that I had a “difficult project.” When I remained undeterred, you became one of my staunchest advocates, providing resources, contacts, and even employment. I hope you like the results of my difficult project. Thank you to Andy Yatsko for telling me about San Clemente Island and contextualizing Lemon Tank. Thank you to John Johnson and Tacy Kennedy for talking with me about my research and providing access to the Santa Barbara Museum of Natural History’s collections. Thank you to Chester King for your workshop on shell bead identification and for answering my questions about identifying needle-drilled bead perforations. Thank you to Brian Barbier for insights on shell bead production. Thank you to Devlin Gandy for help with ethnographic resources. Thank you to Lee Panich for alerting me to Seetha Reddy’s research on Tongva use of Spanish plants in rituals. Thank you to Jennifer Perry for first suggesting that I look into the Lemon Tank collection and providing resources on ritual in the Channel Islands.

Thank you to my fellow students at CSUN for sharing the struggles and triumphs of grad school. In particular, thank you to Austin Ringelstein for help with resources and bouncing off ideas about our related research projects. Thank you to Allison Hill for suggesting several helpful resources. Thank you to Joanne Minerbi for help with cleaning up the site map. Thank you to Anne Whitehair, Josi Pellicano, and Jude Gonzalez for your camaraderie and support.

When first I announced that I wanted to leave my engineering career in the middle of a recession and go to grad school to pursue archaeology, a lot of people looked at me as if I had said I wanted to go skydiving without a parachute. The people who cheered me on have been instrumental in my success. Thank you to Laurel Corona for giving me insights about academia. Thank you to Seetha Reddy for talking with me about archaeology and recommending that I look into Crow Canyon for experience. Thank you to Mark Varien for advice on grad schools and helping me figure out how to explain my unusual background in my applications. Thank you to Mark Clements, Judy Reeves, and David Robb for your enthusiasm about writing recommendation letters. Thank you to the Gorilla and Freedom Writers Read & Critique groups. In particular, thank you to Melanie Hooks, Doug Lathrop, Laura Perkins, Aron Stephanis, and Janet Tait for help with my statement of purpose in my applications. Doug, I wish you could have lived to see me finish my thesis and prepare for my PhD. Thank you to Laura Struhl and Paulette Theresa for being anchors of sanity. During my nomadic summer crisscrossing several states for my archaeological field school and subsequent move to Los Angeles, many people helped me with packing and/or opened their homes to me. Thank you to Annie Beach; Suad Campbell; Amy, Gene, Sean, and Alex Cummins; Melanie Hooks; Brad Hyslop; Cris Powell; John Rogers; Janet Tait; and Anton and Saumya VanderWyst.

Thank you to my family, especially Renee Rareshide, Lanaux Rareshide, Jessica Rareshide, Elisabeth Rareshide, Annie Beach, and Charles Rareshide. You have nurtured my love of learning, and your words of support have sustained me.

Finally, for those that I have somehow forgotten to name here, I apologize for my oversight. Thank you for all of your encouragement. You and everyone else here have helped make the journey of life more fulfilling. May we continue to share many adventures for years to come. Onward!

DEDICATION

For the family and friends who supported me as I took a leap of faith from engineering to archaeology

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Tongva Ritual Practice on San Clemente Island: Exploring the Origins of the Chinigchinich Religion

By

Elisabeth Rareshide

Master of Arts in Anthropology

The Chinigchinich religion is believed to have started among the Tongva on the Southern Channel Islands or at Puvungna and then spread to neighboring Takic peoples during the Protohistoric and Mission Periods in Alta California. Some scholars have hypothesized that the Chinigchinich religion developed from pre-Contact religious traditions in southern California, syncretically incorporated elements from Christianity, and/or constituted a nativistic revitalization movement that arose in opposition to Spanish colonization of Alta California.

With a variety of ritual features, including canid and avian burials and public mourning features, the Lemon Tank (CA-SCLI-1524) artifact collection from San Clemente Island provides a rich source of data on Tongva ritual practices. Historical and ethnographic research connects some of these ritual features to the Chinigchinich religion. By using needle-drilled shell beads to determine which ritual features from Lemon Tank securely date to the Historic Period, this exploratory research investigates the development of Tongva ritual practices during the Mission Period.

At least 16 of the 40 features that were analyzed securely date to the Historic Period. The data from Lemon Tank do not suggest the *de novo* emergence of unique ritual practices among the Tongva on San Clemente Island during the Mission Period. The abundance of shell beads and relative dearth of glass beads at Lemon Tank suggests that San Clemente Islanders may have actively avoided incorporating Spanish material culture in their ritual practices. This pattern may indicate that the Chinigchinich religion was a nativistic revitalization movement. This study concludes with discussion of possible fruitful lines of inquiry for future research on the origin and development of the Chinigchinich religion.

CHAPTER 1: INTRODUCTION

The Spanish missions in the New World provide an opportunity to explore how people from completely unrelated religions interacted with each other and negotiated the unequal power relations of colonialism. The Mission Period in Alta California (AD 1769-1834) radically changed the lives of indigenous people and missionaries. Yet not all indigenous people joined the missions, and some continued to practice pre-colonial rituals during and after the Mission Period. Investigating indigenous religion both within and far from the missions fosters a better understanding of colonial religious dynamics. Studying the Tongva Chinigchinich religion in southern California presents such an opportunity. Many Tongva people joined the Spanish missions in Alta California, but some practiced rituals connected to the Chinigchinich religion on San Clemente Island during the Mission Period. Though offshore from the Alta California mainland, San Clemente Island was largely outside of direct missionary control. Archaeological investigation on San Clemente Island can illuminate how elements of the Tongva religious system may have been retained in the face of Catholic evangelism and how they may have been adapted to the changing needs of the Tongva within a colonial context.

The Spanish missions have been the subject of historical and archaeological inquiry for over a century. Although some historians have addressed the conversion process in the Spanish missions of Alta California (Hackel 2013; Sandos 2004), most ethnohistoric documents from the Mission Period were written by high-status European men with political agendas. These documents left out the non-literate majority of the population, including almost all indigenous people (Voss 2008:111-112). Furthermore, colonizers' accounts tend to be biased in favor of European domination of indigenous people without addressing indigenous experiences (Liebmann 2012:7). Finally, the emphasis on how people represented themselves and others often overshadows how they actually behaved. Historical archaeology is a means to piece together the practices of those who left no direct written records (especially indigenous people) and to fill in some of the gaps and misconceptions in the historical record (Liebmann 2012:8; Lightfoot 2005:15-17; Voss 2008:112-113, 121). This approach is critical to understanding the Tongva side of religious interactions during the Mission Period.

Religious dynamics in the missions were more complex than the popular image of Franciscans converting indigenous people. The religious conversion process depends on the methods used to indoctrinate religious beliefs and practices and on the political, social, and economic backgrounds and goals of the evangelists and the evangelized (Äikas and Salmi 2013; Graham 1998; Kristjánsdóttir 2015). Understanding religious interactions in the Spanish missions therefore requires contextualizing the backgrounds of the missionaries and indigenous people. Religious evolution is the product of many individuals' choices in the context of their personal circumstances. Indigenous responses to Spanish missionization ranged from acceptance to resistance. Though many indigenous people adopted aspects of Catholicism, they in turn changed Catholicism with elements of their pre-Contact religions. In cross-cultural encounters, people actively draw on beliefs and practices from different religions as they confront new social, political, and economic realities—including the upheaval of colonialism—that neither source religion can adequately address alone (Watanabe 1990).

Recent anthropological theory on religion (Äikas and Salmi 2013; Asad 1983; Boivin 2009; Kirsch 2004; Lindquist and Coleman 2008; Mitchell and Mitchell 2008) aims to avoid making the Christian assumptions that many Western scholars, such as Geertz (1973:123-125), have brought to their analyses of non-Christian religions, including the emphasis on belief over practice, the treatment of belief as a static state, and the differentiation of the supernatural and natural worlds. Addressing this bias is therefore integral to my research. This thesis focuses on ritual practice because the archaeological record can better reveal religious practice than belief. Practice is not subordinate to belief in religion. Therefore my definition of religion assumes the equal interplay of belief and practice. In line with current theory on religion, I treat practice as the performance of religion, not simply the acting out of belief.

Here I analyze Tongva ritual practice on San Clemente Island to assess the effects of the mission system during the Mission Period in Alta California. My exploratory research investigates the complexity of colonial interactions to understand how the Tongva responded to the missionaries' goal of changing their religion. Examining documents from Franciscan records and ethnographic research in conjunction with analyzing material culture from Tongva ritual practice during the pre-Mission and Mission Periods facilitates deeper understanding of religious development in the context of colonial power dynamics in Alta California.

Some scholars have hypothesized that the Chinigchinich religion of the Tongva developed from pre-Contact religious traditions in southern California (DuBois 1908a; Lepowsky 2004:13-15; Strong 1929:323-324), syncretically incorporated elements from Christianity (Bean and Vane 1978:669; Hale 1995:39-40; Raab 2009c:201; White 1963), and/or constituted a nativistic revitalization movement in response to colonization (Bean and Vane 1978:669; Hale 1995:38; Hardy 2000; Kroeber 1976:656; Lepowsky 2004:13;

Raab 2009c:199-200; White 1963). These hypotheses are not necessarily mutually exclusive. In order to assess these hypotheses, one must be able to date the development of the Chinigchinich religion. Sharp changes in religious beliefs or practices that coincide with European Contact and missionization would support hypotheses that the Chinigchinich religion developed in response to foreign influences. Continuity between prehistoric and historic religious beliefs and practices would support the hypothesis that the Chinigchinich religion developed from existing indigenous religious traditions.

Several archaeological sites on San Clemente Island, including Big Dog Cave (CA-SCLI-119), Ledge (CA-SCLI-126), Lemon Tank (CA-SCLI-1524), Old Airfield (CA-SCLI-1487), and CA-SCLI-1437, have been connected to Chinigchinich ritual practices based on similarities between pit features and descriptions of Chinigchinich rituals in the ethnohistoric record (Ehringer 2003; Hale 1995; Hardy 2000; Raab 2009:202-204). All of these sites have been dated to the Historic Period based on colonial or post-colonial artifacts found at these sites (Ehringer 2003:1; Hardy 2000; Raab 2009:203-204; Wahoff and York 1999:641). However, except for a few ^{14}C samples and the recognition that historic artifacts indicate historic activity, there has been little diachronic analysis of the San Clemente Island ritual sites.

The Lemon Tank (CA-SCLI-1524) collection from San Clemente Island contains artifacts from a variety of ritual features, including canid and avian burials and public mourning features. In her thesis, *The World in a Basket: Late Period Gabrielino Ceremonial Features from the Lemon Tank Site, San Clemente Island, California*, Hale (1995) classifies the ritual features at Lemon Tank and links different types of features to specific Chinigchinich ritual practices. Two radiocarbon dates from Lemon Tank support dating this site to the Protohistoric and Mission Periods (AD 1542-1834). However, a third radiocarbon date predates Cabrillo's 1542 voyage through the Channel Islands by more than five centuries and suggests that Lemon Tank was a site of ritual practice long before Europeans arrived in the New World (Hale 1995:12; Raab 2009c:204).

In order to understand the development of Chinigchinich ritual practices, higher resolution dating of individual ritual features is necessary. Each ritual pit feature represents a snapshot in time of a particular ritual performance. Shell beads are ubiquitous across Lemon Tank, and the collection includes stone-drilled and needle-drilled beads. Therefore the shell beads associated with a feature can indicate the earliest date that people performed the ritual that produced that particular feature. My thesis builds on Hale's (1995) work by dating these features using the shell bead typology developed by Bennyhoff and Hughes (1987) and updated and refined by Milliken and Schwitalla (2012). Needle-drilled shell beads first appeared in the Mission Period when the Spanish introduced iron needles (Milliken and Schwitalla 2012:56). By determining which features include needle-drilled beads, I determine which features (and therefore which rituals) securely date to the Historic Period.

Furthermore, choices about consumption of indigenous and Spanish material culture may illuminate meaning in ritual practices and provide another line of evidence for assessing hypotheses about the origin of the Chinigchinich religion. In particular, shell beads were an important part of many indigenous Californian cultures for thousands of years before Europeans introduced glass beads (Bennyhoff and Hughes 1987; Duggan 2004:27; Milliken and Schwitalla 2012:56-58; Raab and Howard 2009:123-124). Combining the temporal analysis of shell beads with comparison of the use of shell beads and glass beads in the Lemon Tank features allows a preliminary assessment of the development of the Chinigchinich religion on San Clemente Island.

The research questions guiding my investigation are:

1) Which Lemon Tank ritual features securely date to the Historic Period?
2) Which types of features securely date to the Historic Period?
3) Do any types of features only date to the Historic Period? Such a pattern would suggest that a particular type of ritual could have developed after European Contact, possibly in response to European colonization.
4) How did Tongva ritual practice on San Clemente Island, which was largely outside of direct missionary control, develop during the Historic Period?
5) What elements of the Tongva religious system were retained, and how did colonial Christianity affect Tongva religion? Which hypotheses regarding the origin of the Chinigchinich religion are supported or unsupported by diachronic analysis of Tongva ritual practice at Lemon Tank?

To interpret the data, I combine historical archaeology with current anthropological theory on religion to examine the development of the Chinigchinich religion on San Clemente Island. This bead analysis is a first step towards assessing whether certain aspects of the Chinigchinich religion are likely responses to the mission system. Based on the results, I suggest possible fruitful directions for future research.

In this thesis, I first provide an overview of the Tongva with emphasis on the Chinigchinich religion as revealed by ethnohistoric documents and archaeological research. This overview includes discussion of scholarly hypotheses regarding the origin of the Chinigchinich religion. To contextualize religious interactions during the Mission

Period, I then reconstruct an image of indigenous people’s experiences in the Spanish missions in Alta California and the role of the Chinigchinich religion in Toypurina’s Revolt at Mission San Gabriel in 1785. To explain my theoretical perspective in my analysis and interpretation, I next present anthropological theory on religion, including the dynamics of power relations in the processes of religious conversion, amalgamation, and revitalization. Then I provide an overview of San Clemente Island’s geography, human occupation, and archaeological history. After this overview, I present my shell bead analysis method and the results of my investigation of the Lemon Tank collection, including my comparison of the shell bead and glass bead assemblages. In light of this evidence, I assess the hypotheses regarding the origins of the Chinigchinich religion. I conclude with discussion of potentially productive lines of inquiry to build on this exploratory research.

CHAPTER 2: THE TONGVA AND THE CHINIGCHINICH RELIGION

Overview of Indigenous California

The diversity of indigenous communities in Alta California before missionization is reflected in the 80-100 indigenous languages spoken in the region—approximately one fifth of all of the languages spoken in North America (Hackel 2013:164). Expending relatively little physical labor compared to the work demands of European agriculture, indigenous Alta Californian hunter-gatherer communities tended to be “autonomous, egalitarian, and willing to move seasonally to maximize food production” (Hackel 2013:165-166). Approximately 310,000 indigenous people lived in Alta California at the start of the Mission Period in 1769. Roughly one fifth lived along the coast between San Diego and San Francisco, the region Junípero Serra targeted for missionization (Hackel 2013:163).

At the time of European Contact, the Takic branch of the Uto-Aztecan language super-family extended west across southern California and is known as the Shoshonean Wedge (Raab and Howard 2009:131). Takic-speaking populations include the Tongva/Gabrieliño, Fernandeño, Acagchemem/Juaneño, Payomkowishum/Luiseño, Serrano, Cahuilla, and Cupeño. Geographically, these Shoshonean groups separated the Hokan-speaking Chumash and Ventureño from the Hokan-speaking Diegueño. The Shoshonean-speaking Tongva/Gabrieliño occupied the Southern Channel Islands (including San Clemente Island) while the Hokan-speaking Chumash occupied the Northern Channel Islands (Hale 1995:34-35; Hardy 2000; Perry 2013:139; Raab 2009b:60).

Southern California Ethnic Groups and Ethnohistoric Sources

One of the challenges of researching indigenous/colonial interactions is defining pre-colonial indigenous ethnic groups in order to use appropriate ethnohistoric sources. Ethnonyms such as "Gabrieliño" and "Luiseño" reflect mission communities, not how pre-colonial indigenous communities identified themselves. "Island Gabrieliño" and "Tongva" are retroactive names; the names these people used are unclear (Raab 2009b:59). Even twentieth-century anthropological definitions of ethnic groups based on language groups do not always reflect the way indigenous peoples viewed ethnicity and tribal affiliation (Lightfoot 2005:38-39). Furthermore, such categories fail to account for cultural change over time, particularly the effects of more than three centuries of European and Anglo-American interactions before anthropologists had conducted their salvage ethnographies. In addition, ethnonyms can mask internal cultural diversity. For example, there were multiple Chumash communities with different practices and even different words for naming the same thing. At the same time, there were some broad consistencies between communities. For example, regional homogenization of mortuary practice among the Chumash by about 1000 BP indicates regional social and ideological integration (Corbett 2007:274).

The difficulty of defining pre-colonial indigenous ethnic groups complicates determining which historical and ethnographic sources are most appropriate for this research on the ritual practices of San Clemente Islanders. Since the San Clemente Islanders were decimated by epidemics before missionary records began in the region, much ethnographic information comes from inland and Chumash sources (Hardy 2000). Ethnohistoric sources on Tongva life include accounts by European explorers, missionaries, colonial officials, and immigrants (Beebe and Senkewicz 2007; Boscana 1978; Geiger and Meighan 1976; Kroeber 1908; Reid 1968; Vizcaíno 1959); a nineteenth-century Luiseño Christian's account of his people's history (Tac 2011); and twentieth-century ethnographic research on related ethnic groups such as the Luiseño, Juaneño, Diegueño, and Chumash (DuBois 1908a; DuBois 1908b; Kroeber 1976; Librado *Kitsepawit* 1977; Strong 1929; Waterman 1910; White 1957; White 1963).

Gerónimo Boscana

Much of what is known about the Chinigchinich religion during the Mission Period comes from Gerónimo Boscana's description. Boscana was a missionary stationed at Mission San Juan Capistrano from 1814 to 1826 and then at Mission San Gabriel until his death five years later (Hodge 1978:12). Kroeber (1976:636-637) argues that the Juaneño of Mission San Juan Capistrano had adopted much Gabrieliño culture, which means that Boscana's account probably described Gabrieliño and Juaneño culture. Boscana's (1978:17-18) information came from three elderly men, two of whom were chiefs and one who was a shaman. They shared their information with Boscana after he gave them gifts and developed trusting relationships with them. Boscana also observed some ceremonies. Boscana wrote his account because he believed it was important for future missionaries to understand the local indigenous religion so that they could effectively convert people to Christianity. Boscana (1978:37) saw the Chinigchinich religion as the work of Satan, who wanted to distract indigenous people from the path of Christianity. His biases must be considered when relying on his account.

Pablo Tac

Pablo Tac was a Luiseño Christian who was raised at Mission San Luis Rey de Francia in the 1820s (Haas 2011:3). He traveled to Rome in 1834 to train as a Catholic missionary and wrote his Luiseño grammar and dictionary and his history of the Luiseño people for Giuseppe Mezzofanti, a Vatican linguist and librarian, during his seminary studies before his death in 1841 (Haas 2011:3-4, 9-12, 15). Tac describes how the Luiseño people accepted Christianity while still retaining some power and maintaining aspects of their pre-colonial religious system (Haas 2011:25-28). Tac's manuscript is a unique window into the perspective of an indigenous Christian from the Alta California missions.

Differentiating Southern California Ethnic Groups

Defining and differentiating the Tongva, Chumash, and other southern California ethnic groups is complicated. While differentiating the Chumash and Tongva, Lee (1981:15) and Hardy (2000) argue that they share some cultural traits. The Tongva and Chumash lifeways are quite similar and appear to vary based on distance from the coast, not linguistic distinctions (Hale 1995:35; Hardy 2000; Meighan 2000). Indeed Perry (2013:148) argues that because of their environment, Chumash and Tongva islanders had more in common with each other than with their mainland counterparts. Both the Chumash and Tongva had similar maritime subsistence strategies, including the use of plank canoes (Boscana 1978:24; Gamble 2008:279; Raab 2009b:61). In spite of their similarities, Raab (2009b:60) cautions against direct extrapolation of Chumash culture to Tongva culture. Overall, evidence for social complexity on the Southern Channel Islands is weak, which means that Tongva society cannot be directly reconstructed using Chumash ethnographic sources (Raab 2009a:194). However, Chumash sources can still illuminate aspects of Tongva culture.

Mission Period authors noted linguistic similarities between several Takic peoples. According to Tac (2011:206-209), the Luiseño and Juaneño spoke the same language with different pronunciations. Tac also believed that the Gabrieliño and Fernandeño spoke the same language. Boscana (1978:85) reported that the indigenous people who had settled in the Valley of San Juan Capistrano spoke a language similar to that of the Gabrieliño. The Juaneño said that the differences between themselves and the Gabrieliño occurred because their founding chief, Oyaison, had instructed them to change their speech and customs when they settled in their new home. The similarities between these groups support the relevance of non-Tongva, Takic ethnographies in reconstructing Tongva lifeways.

The Chinigchinich Religion: Social Context and Theory

Prehistoric San Clemente Islanders were socially integrated with mainland groups for trade and marriage partners (Raab and Yatsko 2009:4). Ceremonial feasts made reciprocal exchange a regular occurrence and therefore integrated social networks through the redistribution of resources irrespective of environmental stress. For example, at least three communities were involved in a mourning anniversary ceremony: the host, the financial backer that paid the host community in exchange for food and gifts, and the community that helped ritually wash mourners at the end of the ceremony. People from many other communities across a wide geographic region would join the ceremony as spectators (Bean and Vane 1978:662; Blackburn 1974:99-100, 109-110). Communities resolved inter-village conflicts through *maxhahish* ceremonies in which opposing villages sang insulting songs as a proxy for violence. These ceremonies took place after battles, and the chief of the losing village ritually destroyed his turtle shell rattle in the winning village's ceremonial enclosure (White 1963). In southern California, regional ritual organizations included the Chumash *'antap* and the Takic (including Tongva) Chinigchinich. The boundaries between these ritual organizations were fluid, and people participated in neighboring communities' ceremonies (Bean and Vane 1978:662; Perry 2013:139).

The Tongva/Gabrieliño, Acagchemem/Juaneño, and Payomkowishum/Luiseño, all Takic speakers, were adherents of the Chinigchinich religion. Chinigchinich was a deified shamanic hero who taught moral beliefs and practices that he enforced through animal avengers (Bean and Vane 1978:669; Perry 2013:139-140; Raab 2009c:200-201; Sandos 2007). He helped those who followed his rules and punished those who disobeyed (Boscana 1978:39; Kroeber 1976:656; Perry 2013:139; Sandos 2007). In the ritualized worship of Chinigchinich, people asked for his protection as they hunted and gathered food (Boscana 1978:38).

According to Boscana (1978:27-33), the coastal and inland Juaneños had slightly different accounts of the creation of the world. Both told of the ancient chief Ouiot, who died when his followers poisoned him. While the elders discussed the management of the tribe and how to procure food after Ouiot's death, Chinigchinich appeared to them, saying he was a mighty chief who lived above. "He said that he had come from the stars to teach them those things of which they were ignorant. After dancing a considerable time, he separated the chiefs and elders from among them…. To these Indians was given the name of *puplem*, who would know all things, and relieve the infirm and diseased" (Boscana 1978:33-34). He gave different elders powers over rain and subsistence plants and animals. The descendants of those to whom Chinigchinich had granted these powers were regularly consulted regarding procuring the type of resources over which they had power. Chinigchinich instructed people in proper behavior and rituals (Boscana 1978:29, 33). "He then said unto them these words: 'Him who obeyeth me not, or believeth not in my teachings, I will chastise. To him, I will send bears to bite, serpents to sting, misfortunes, infirmities, and death'" (Boscana 1978:29). Chinigchinich first instructed people to build a ceremonial enclosure, which only the chief and *puplem* could enter. Chinigchinich taught the *puplem* ritual dances and promised to provide food and heal sicknesses when they performed these dances (Boscana 1978:29, 34; Perry 2013:140). Those who committed crimes against the chief or *puplem* were executed to avoid Chinigchinich's exacting revenge on the whole community (Boscana 1978:43).

Among the Juaneño, the elite elders comprised the *puplem* and checked the power of the chief. The *puplem* kept track of the months, telling the rest of the village when to perform the tasks of each month (Boscana 1978:41, 65). Specialized religious knowledge, particularly the meanings of customs and rituals, was limited to chiefs and elders who conducted ceremonies (Bean and Vane 1978:662; Boscana 1978:17). Indeed the language of the Chinigchinich religion was different from the commoners' vernacular. Though the chief and *puplem* had little material power, people treated them with awe and respect for their secret religious knowledge (Boscana 1978:17, 42-43).

Hypotheses on the Origin of Chinigchinich Religion

The Chinigchinich religion started among the Tongva on San Clemente Island, Santa Catalina Island, or at Puvungna near the confluence of the San Gabriel and Los Angeles Rivers. The religion spread among the Tongva, Luiseño, Juaneño, and Ipai-Tipai peoples (Bean and Vane 1978:668-669; Kroeber 1976:567; Lepowsky 2004:12-13). The Luiseño say that the Chinigchinich religion came from people from the north, who brought it to the people of Santa Catalina and San Clemente Islands (DuBois 1908b). The prophecies of Chinigchinich started spreading as early as the Protohistoric Period (Lepowsky 2004:13). The Chinigchinich religion spread rapidly and reached its widest geographic extent during the Mission Period (DuBois 1908b; Lepowsky 2004:12). The islanders taught it to people at Mission San Juan Capistrano, who passed it to people at Mission San Luis Rey, who passed it to the upland Luiseño and the Diegueño (DuBois 1908a; DuBois 1908b; Kroeber 1976:656; Waterman 1910; White 1957).

Salvador, one of DuBois' (1908b) informants, said the transmission of the Chinigchinich religion between mission communities and on to inland groups happened around 1790. Lucario Cuevish, another informant, was born at Mission San Luis Rey and remembered how people from the mountains came to the mission where they were initiated in a toloache (*Datura*) ritual. DuBois (1908a) argues that the Mesa Grande Diegueño adopted some Luiseño rituals around 1790. Some of Waterman's (1910) older informants recalled when the Luiseño rituals were first introduced to the Diegueño. Linguistic evidence in the form of Luiseño songs sung in the Gabrieliño language and Diegueño songs sung in the Luiseño language supports this reconstructed transmission route (DuBois 1908a; Kroeber 1976:659-660; Waterman 1910). Steatite effigies from

Santa Catalina Island found on the Northern Channel Islands may indicate that the Chinigchinich religion also spread to the Chumash (Lepowsky 2004:13).

Based on the rapid way people transmitted the religion, DuBois (1908b) argues that the Chinigchinich religion was spread by active indigenous missionaries. In her view, indigenous people embraced the Chinigchinich religion because it invoked fear, mandated obedience, included dramatic rituals, and empowered the holders of secret religious knowledge.

Although older and newer rituals are often combined, religious trends can still be seen. The girls' initiation ritual appears separate from other classes of rituals, but its wide geographic distribution implies an ancient origin. Likewise, the mourning rituals have a wide geographic distribution in southern California and are therefore probably old traditions. Since the Chinigchinich songs have a small geographic range, Strong (1929:323) argues that they are likely relatively recent developments in Luiseño religion. Chinigchinich rituals were generally limited to coastal communities (Hale 1995:46-47). Since the name of Chinigchinich is only used among the Luiseño and Cupeño while the toloache religious system also includes the Serrano and Cahuilla, Strong (1929:324) argues that the Chinigchinich religion should not be conflated with the likely older toloache religious system. Based on their relative geographic extent, Strong argues that the Ouiot creation myth is older than the toloache religious system, which is older than narratives about the deity Chinigchinich.

Autochthonous Development from Existing Indigenous Religion

DuBois (1908a) argues that the Chinigchinich religion was likely added to the existing indigenous religion instead of replacing it. Parallels between the myths of the death of the Luiseño god Ouiot and the death of the Diegueño creator-god Tuchaipa reflect a shared religious source. DuBois argues that myths about the death of a god likely indicate prehistoric religious influence from indigenous people in what is now Mexico. Strong (1929:323-324) argues that ritual *Datura* use and sand paintings developed in the toloache religious system and were later adapted into the Chinigchinich religion.

Likewise Lepowsky (2004:13-15) argues that the Chinigchinich religion shows strong continuity with prehistoric indigenous religious beliefs and practices (e.g., ritual use of *Datura*) and was not a *de novo* innovation of the Mission Period. Although the Chinigchinich religion included reconfigurations of existing religious practices and beliefs, its foundation comprised pre-colonial indigenous religion, not Christianity.

Syncretism with Spanish Colonial Catholicism

White (1963) argues that aspects of the Chinigchinich religion indicate Old World source material. For example, three days after the hero/deity Ouiot died, he arose as Moila, the moon. After Ouiot's death, all people were fated to die, although they could be resurrected as stars. Ouiot's death and resurrection echo that of Jesus. Although the Chinigchinich religion includes parallels with Christianity, it spread among the Luiseño through separate channels from Christianity (White 1963). Reid (1968:101-102) wrote that the Gabrieliño had two religions: their pre-colonial religion and Catholicism. Given the Luiseño ease with adhering to multiple religions simultaneously and their distinction between Christianity and the Chinigchinich religion, foreign influences may have been separated from the development of the Chinigchinich religion (White 1957; White 1963). Therefore White argues "Luiseño religion is additive but not syncretistic" (1963).

According to Bean and Vane (1978:669), the hero/deity Chinigchinich taught practices and beliefs that syncretically overlaid the existing indigenous religion. Raab (2009c:201) argues that the Chinigchinich religion is a syncretic mix of pre-colonial shamanism and Christianity. The deity Chinigchinich mirrors Christ as a messiah who judges and punishes human behavior. Indeed, some of Harrington's informants named Chinigchinich the "Indian Christ" (Lepowsky 2004:16). "This moralistic tone represents a distinct departure from the shamanistic religions that characterized most of Native California, where shamanism was concerned largely with matters such as witchcraft, healing, divination, and the rites of passage associated with birth, puberty, and death" (Raab 2009c:201). Hale (1995:39-40) argues that evidence for European influence includes the concept of individuality (as opposed to group identity) in the case of individual ownership of Chinigchinich objects.

Lepowsky (2004:13) cautions that apparent connections between the Chinigchinich religion and Christianity in nineteenth-century ethnohistoric documents and early twentieth-century ethnographies may reflect the Christian biases of Boscana and baptized informants. Indeed Boscana tried to determine what indigenous people understood of Christianity. He often commented on aspects of the Chinigchinich religion that paralleled or diverged from Christianity:

> They have some allusion to the truth. We have the six productions of the mother of Ouiot, corresponding to the six days of the creation of the world; the Indian

formed of the earth or clay, like our first parent; and Ouiot, analogous to Nimrod of the Holy Scripture. I do not know to whom we may compare Ouiamot, unless it be to Simon Magus, as his teachings were idolatrous. [Boscana 1978:35]

Boscana (1978:63) recounts the Juaneño song that parallels the biblical flood Noah survived, although he wonders how the Juaneño learned about the flood. According to the Juaneño, the descendants of Ouiot sought vengeance against their chief, and Chinigchinich told the people with rainmaking powers to instigate a great flood that destroyed everything except for a mountaintop refuge. Given his Christian perspective, Boscana likely drew on Christian concepts in his description of the Chinigchinich religion.

Possible Revitalization Movement

According to Kroeber (1976:666-667), southern Californian ritual practices and religious beliefs developed separately; therefore ritual practices do not necessarily reflect religious beliefs. Kroeber (1976:656) argues that the Luiseño initiation and mourning rituals likely predate the development of the Chinigchinich deity, who was incorporated into the existing indigenous religious system.

> The god of this religion seems to be forced rather lamely into the cosmogony of the Gabrieliño and Juaneño: what is said of him lacks the true mythological ring, the color of incident; the statements are abstract or rationalizing. Among the Luiseño he enters hardly if at all into narrative. The Diegueño, finally, though they have taken over most of the Luiseño practices, do not seem to know the god:

at least his name has never been recorded among them, nor any synonym. [Kroeber 1976:656]

Although Kroeber (1976:656) characterizes Chinigchinich as a Jehovah, he concludes that the pre-colonial indigenous characteristics of the Chinigchinich religion and lack of European symbolism indicate that it did not come from Spanish influence. At the same time the missions may have indirectly spurred the development of the Chinigchinich religion since the Luiseño adopted it during the late Protohistoric or Mission Periods. According to Lepowsky, “the new religion synergized earlier beliefs and ceremonies with prophecies catalyzed by and in opposition to the new revelations of Catholic religious philosophy” (2004:13). The Chinigchinich religion was promoted as an alternative to Christianity that resisted Spanish colonial power (Lepowsky 2004:15).

Hale (1995:38) also argues that the limited geographic extent of the Chinigchinich religion indicates that it developed late, possibly as a nativistic movement after European Contact. Native American revitalization movements, such as the Ghost Dance in western North America, provided a means to build indigenous solidarity and promote indigenous lifeways in the face of European expansion (Raab 2009c:198-199). Bean and Vane (1978:669) and White (1957) hypothesize that the Chinigchinich religion may have been a crisis cult in response to epidemic diseases that ravaged Gabrieliño and Luiseño communities before the Spanish established missions in their territories. White (1963) argues that when European diseases decimated the Luiseño and the existing religious system failed to ameliorate the problem, the Chinigchinich religion developed as a nativistic movement intended to counter the effects of colonialism and expel the Spanish. The deity Chinigchinich attributed the many deaths during epidemics to people’s moral failings (Lepowsky 2004:13). Bean and Vane (1978:669) argue that the persistence of the Chinigchinich religion through the Historic Period indicates that it facilitated indigenous ethnic cohesion in the face of Euro-American hegemony.

Raab (2009c:199-200) argues that the Chinigchinich religion likely developed as European epidemics decimated Gabrieliño communities long before the Alta Californian missions were founded. Hudson et al. (1977:4) also hypothesize that the Chumash *'antap* and Luiseño Chinigchinich religions likely date to the Protohistoric Period and were influenced by European Contact. This possibility is plausible. Foreign influences may have come from the Manila Galleons that passed through the Santa Barbara Channel near Santa Catalina and San Clemente Islands starting in 1565 during the Protohistoric Period (White 1957). During the supply ship voyage in 1769 to establish the first missions in Alta California, Juan Vizcaíno reported that indigenous people in the Santa Barbara Channel already displayed some knowledge of Christianity: "They pronounced 'to love God,' 'God who created us,' 'who is in Heaven,' in order to indicate the facility they had in our language. They had glass beads which indicates that such came from overland, or from the nearest of the California Missions" (Vizcaíno 1959:24-25). Vizcaíno's account suggests that Spanish proselytization in Tongva territory started during the Protohistoric Period. A nativistic movement may have tried to counteract such developments before Serra's intense missionization program began.

Shamanism

The Chinigchinich religion was connected to indigenous shamanism. In indigenous California, different people, places, and objects (e.g., quartz crystals and effigies) were considered animate sources of power that individuals could harness for benevolent or malevolent purposes. Individuals gained power through hallucinatory vision quests. While many people could manipulate power using particular objects, ritual specialists such as shamans could access relatively vast stores of power through powerful regalia and potent ritual knowledge (Bean and Vane 1978:662, 668; Hardy 2000; Perry 2013:137, 141). Shamans were believed to have the power to cause natural disasters, foretell the future, heal the sick, and injure or kill people (Applegate 1975; Bean and Vane 1978:668; Boscana 1978:71; Hardy 2000; Reid 1968:32). In Southern California, indigenous people used song, dance, and ceremonies to teach ritual knowledge and practice ritual manipulation of the world to ensure balance and gain power (Boscana 1978:17; Hardy 2000).

Datura and the Toloache Religious System

The *'antap* and Chinigchinich ritual organizations conducted toloache rituals and used *Datura* (toloache) in ceremonies (Bean and Vane 1978:667-668; Kroeber 1976:567; Perry 2013:140; Sandos 2007). Many indigenous peoples in the Americas used the hallucinogenic *Datura* to divine the future and communicate with the dead (Applegate 1975; Lee 1981:21). *Datura* is common in public rituals across southern California, which indicates that its use is an old tradition (Hardy 2000; Strong 1929:323-324). The toloache religious system extended from the Pacific coast to the Santa Rosa and San Jacinto mountains and as far south as the Diegueño territory. Toloache songs often reference the death of the god Ouiot in the creation myth and Chinigchinich (Strong 1929:322-324). Toloache rituals persisted during the Mission Period. Missionaries at

Missions San Luis Rey and San Fernando reported that the local indigenous people, including some mission residents, drank *Datura* (Geiger and Meighan 1976:47-48; Kroeber 1908).

In southern California, adolescents and adults mainly used *Datura* to connect with an *'atišwɨn* (dream helper). The *'atišwɨn* was usually an animal spirit that protected and assisted its seeker and gave a talisman (Applegate 1975; Lee 1981:17). Talismans, called *'atišwɨn* because of their connections to dream helpers, were made of parts of animals (e.g., bears and raptors), shell, bags of earth, and quartz crystals. An effigy is a talisman shaped like a zoomorphic or anthropomorphic figure (Hudson and Blackburn 1986:142, 149-154, 171). Most effigies represent animals, although some are highly abstract. An effigy's power was only effective for its owner, and they were often buried with their owners (Lee 1981:45, 54).

During the Mission Period, some Chumash people wore an *'atišwɨn* under their shirts the same way people wore Catholic charms (Hudson and Blackburn 1986:144). Indeed, rosaries were used as talismans (Hudson and Blackburn 1986:220). Talismans therefore had strong syncretic potential with Catholicism. However, they could still incur the Franciscans' ire, as an ethnohistoric account shows:

> Agapito had his *'atišwɨn* on under his shirt hanging in front, and from it had a rosary hung from the back of his neck. When he died, and they heard that Fr. Sanchez of the mission was coming, the medicine man's (Agapito's) wife turned the rosary so that it hung in back, but [Luisa Ygnacio *nut'u*] was told by María Ygnacia to pull the *'atišwɨn* off. So [Luisa Ygnacio *nut'u*] took it off Agapito and

threw it away and then put the rosary of the dead man on his breast. [Hudson and Blackburn 1986:144-145]

The Chinigchinich Religion: Ritual Practice and Material Culture

Multiple authors (Boscana 1978:37-38; DuBois 1908b; Reid 1968:21; Strong 1929:295-296; White 1963) have described the ubiquitous southern Californian ceremonial structure. It was an oval-shaped enclosure with a circumference of 4-5 yards made of branches and mats attached to wooden stakes. The Juaneño, Luiseño, Cupeño, and Mountain Cahuilla referred to the ceremonial structure as the *wamkish*. The Chumash, Diegueño, Serrano, Pass Cahuilla, and Desert Cahuilla had a similar structure, but with different names (Hale 1995:37). Each *ranchería* (a village, or possibly a clan within a village) usually had its own ceremonial structure (White 1963). The ceremonial structure was often burned after ceremonies were conducted (DuBois 1908b; Strong 1929:295-296).

According to Boscana (1978:37-38), the Juaneño placed an image of Chinigchinich in the *wamkish*. They made the image by sewing a sack of the skin of a coyote or wildcat that included the head and feet. They made a *paelt* (petticoat) of hawk feathers to dress the image of Chinigchinich. Then they filled the sack with arrows and placed more arrows and a bow on it such that it looked like an animal with feathers in its mouth.

Based on ethnographic accounts, most southern California Takic rituals focused on either death or rites of passage (DuBois 1908b; Hale 1995:46). Although there are many similarities in ritual practice across the Channel Islands, there are differences between the Northern and Southern Channel Islands. For example, animal burials were more common in Tongva territory than Chumash territory (Perry 2013:149; Vellanoweth et al. 2008).

Initiation Rituals

Takic groups had separate initiation rituals for girls and boys (Hale 1995:56, 61). Around age six or seven, boys were led through a vision quest to connect with a dream helper (Applegate 1975; Boscana 1978:45; Lee 1981:17). The boys' toloache initiation ritual included consumption of hallucinogenic *Datura* followed by religious instruction. The *Datura* was prepared with a mortar and pestle and given to initiates in a ceremonial structure built next to the *wamkish*. After communicating with their dream helpers, the boys were branded in the *potense* ceremony by burning an herb on their arm or leg to produce a scar and instill strength (Boscana 1978:45-46; DuBois 1908b). Material culture associated with the toloache initiation ritual includes sacred stone bowls, the mortar and pestle to prepare the *Datura*, and the *tukmul* (ceremonial basket-tray) (Hale 1995:57-58). The ritual culminated in a sand-painting instruction rite in which boys were taught proper behavior and warned about the animals that were Chinigchinich's avengers (DuBois 1908b).

The girls' puberty ritual (*wekenish*) was conducted after several girls in the community had had their first menstrual cycles (Hale 1995:62). A girl's reaching puberty was celebrated with a feast. During the ritual, a large pit was dug and lined with stones. After heating the stones with coals, *estafiate* branches were laid on the stones. In the purification ritual, the girl lay on the heated branches for two to three days while eating little. The ritual concluded with a sand painting used to instruct girls in religious symbolism (Boscana 1978:48; DuBois 1908b).

Mourning Rituals

Multiple sources describe rituals focused on death and mourning (Boscana 1978:73, DuBois 1908b; Hale 1995:48; Kroeber 1908; Strong 1929:299-309). Most mourning rituals reference the creation myth and death of the god Ouiot (Strong 1929:322). Mourning ceremonies among the Luiseño, Juaneño, and Diegueño were meant to cut the deceased's links to the world of the living so that they stayed in the world of the dead (Hardy 2000). The dead were either interred or cremated. Cremation was common among the mainland Tongva, although the islanders often practiced inhumation (Bean and Smith 1978:545; Boscana 1978:73; Kroeber 1908). During cremation, "every-thing of use belonging to the deceased, such as his bow and arrows, feathers, beads, skins, etc., were consumed with him, whilst his relatives and friends also added other articles of value to the sacrifice" (Boscana 1978:73). Several missionaries and Hugo Reid reported that mourners made offerings of seeds and beads during funerals (Geiger and Meighan 1976:97-98, 119; Kroeber 1908; Reid 1968:31). The mourners set aside some of the deceased's possessions for the later mourning anniversary ritual (Bean and Smith 1978:545).

The mourning anniversary ritual, which was separate from individual funerals, was common in the Central Foothill region (Blackburn 1974:99). When a clan had several deaths to memorialize, it assembled large quantities of food and gifts for the *Toltcinic* (image ceremony) in which images of the deceased were made of matting and painted. During the *Toltcinic,* the images and valuables (such as beads) were burned (Hale 1995:50; Strong 1929:303-305). The ceremony involved public songs and dances and the burning of the possessions of the deceased people (Reid 1968:40-42). The mourning anniversary ritual incorporated economic and ceremonial reciprocity between communities. In addition to the three communities who managed the ceremony, people from many other communities from the mainland and islands would join as spectators. Chiefs of different villages coordinated the timing of mourning anniversaries to allow people across a wide region to attend the different ceremonies (Blackburn 1974:100-101; Perry 2013:149).

Raptor-killing Rituals

Missionaries at Missions San Diego, San Luis Rey, San Juan Capistrano, and San Gabriel wrote similar accounts of the raptor-killing ritual (Boscana 1978:58; Geiger and Meighan 1976:47, 57; Kroeber 1908). The Tongva conducted raptor-killing rituals during mourning anniversary rituals (Bean and Smith 1978:546). Fledgling birds such as eagles and hawks were taken from their nests, raised in cages, and told messages to deliver to the dead (Hale 1995:52; Kroeber 1908; Strong 1929:307-309). During the night of the ceremony, the bird was brought to the *wamkish* where shamans blew smoke into its nostrils and danced with it before pressing it to death. The bird was believed to be a woman who had run away to the mountains where Chinigchinich transformed her into a bird. After sacrificing the bird, the woman was brought back to life and returned to the mountains (Hale 1995:52; Boscana 1978:58).

Boscana (1978:58) reported that the bird was skinned and its feathers were used to make ceremonial regalia. The bird's body was buried in the ceremonial structure, and people made offerings of seeds and other foods while wailing about how the bird should not have run away. Other missionaries' accounts also report offerings of seeds and beads during the bird's burial (Kroeber 1908).

Based on archaeological evidence, raptor-killing rituals were common in southern California (Hardy 2000). The Encino Village site contained a juvenile red-tailed hawk burial (Langenwalter 1986). Caches on San Clemente Island, including the red-tailed hawks and peregrine falcons buried at Lemon Tank, align with Boscana's description of the raptor-killing ritual (Hale 1995:53; Hardy 2000). Since the raptor-killing ritual was conducted across a wide geographic region and the Hopi (another Uto-Aztecan group) conducted a similar ritual, Hale (1995:53) argues that it likely started before the toloache and Chinigchinich rituals appeared. A newspaper account from 1907 about an eagle ritual performed by the Diegueño indicates that such rituals were also conducted long after the Mission Period (Anonymous 1976:49-53).

Canid Burial Rituals

The Luiseño and Tongva had hunting dogs, and the coyote of Ouiot mythology was closely related to dogs (Hale 1995:68-69; Tac 2011:148-151). Dogs were often eaten in southern California, but several sites contain ritual dog burials that appear unrelated to consumption. Although dog burials have been found at many southern California archaeological sites, there is little reference to canid ceremonies in ethnographies (Hale and Salls 2000). Dog burials were often associated with human burials (Bean and Smith

1978:545). On the Channel Islands, dogs have been found in a variety of contexts, including middens and human cemeteries (Vellanoweth et al. 2008).

Vellanoweth et al. (2008) argue that the similarities between the dog burials across the islands and mainland indicate cultural connections between these regions. “At least 95 dogs from 41 archaeological sites have been recovered from the Channel Islands, 40 from the northern islands (Santa Cruz, Santa Rosa, and San Miguel) and 55 from the southern (Santa Catalina, San Clemente, and San Nicolas)” (Vellanoweth et al. 2008). The relative abundance of dogs on the southern islands may be due to cultural differences between the Chumashan or Hokan speakers on the northern islands and the Uto-Aztecan speakers on the southern islands. A dog burial at CA-VEN-662 was found in a small camp occupied around AD 1200-1600 at Port Hueneme in Chumash territory. Since Port Hueneme is near Tongva territory, this canid burial may reflect Tongva influence (Vellanoweth et al. 2008).

Other sites with canid burials in southern California include a double dog burial at the large village at the Tule Creek site (CA-SNI-25) on San Nicolas Island that dates to the thirteenth or fourteenth centuries. The CA-ORA-849 site (occupied from AD 750 to 1769) on the mainland has a dog burial near two human burials in the Juaneño region (Vellanoweth et al. 2008). The Fernandeño Encino Village site (CA-LAN-43) contains a cremated canid and eleven burials with a total of seventeen canids. Based on radiocarbon dating, the Encino Village canids were buried between approximately AD 900 and AD 1600, which is contemporaneous with the canid burials at Tule Creek and Lemon Tank (Langenwalter 1986; Vellanoweth et al. 2008).

Ritual Dances and Feasting

According to Boscana (1978:57), dancing was the most important part of rituals. Chinigchinich instructed people in dance, and he was lifted to the stars during one of his dances. Tac (2011:196-199) described a dance that took place in a circle roughly 80 paces in circumference around which the audience gathered. Tac (2011:142-143) explained that different ethnic groups performed different dances. "Dance in Europe is only for joy, but ours is for joy, for lament, to make war, for a good harvest. Now that we are Christians, we dance only for ceremonies, in remembrance of our Fathers, Grandfathers, because they died, or because they were vanquished in war" (Tac 2011:144-145). Public ceremonies in the Santa Barbara Channel region included large feasts (Perry 2013:147). Hale (1995:29) argues that public ritual sites should have relatively easy access and enough space for a significant proportion of the population to witness or participate in rituals. Public ritual sites should have evidence of repeated, intermittent use across generations. Lemon Tank and other ritual sites had large, open areas conducive to public feasts and dances (Perry 2013:148).

Mission Period descriptions of Chumash dances and rituals indicate that the missionaries were concerned about the expense of ceremonies and discouraged them. "Eventually the priests began to encourage the Chumash to conduct certain ceremonies. These were probably subject to considerable modification and were scheduled to coincide with Christian holy days, or with the construction of mission buildings" (Martz 1984:5). For example Librado *Kitsepawit* (1977:69, 72-73, 89) reported that the Fox Dance was performed at the Cieneguitas chapel on San Francisco Asís Day and at Santa Barbara for La Ascención del Señor. The Seaweed Dance, purported to cure melancholy, was performed on San Miguel Day. These dances drew people from different mission districts. It is possible that the word “dance” was used instead of “ceremony” to make these activities acceptable to the missionaries.

Shrines

Shrines served different ritual purposes for different groups and individuals. People made offerings, remembered the dead, and celebrated the winter solstice at shrines. Seeds and beads were the most common offerings at shrines (Perry 2007). According to historical accounts, shrines were often located outside of villages (Hudson and Blackburn 1986:84). The missionaries at Mission Santa Inés reported:

> When the rancherías were still inhabited by unconverted Indians, there could be seen in various places bunches of feathers or plumes attached to sticks, which might be called their idol-temples (adoratorios). There they cast seeds and beads in order to obtain good harvests of acorns and other seeds which the fields produce of themselves, and which were their daily nourishment. [Kroeber 1908]

Approximately 20 sites on Santa Cruz Island (one of the Northern Channel Islands) are probably shrines. Most shrines are far from habitation sites, which matches ethnohistoric and ethnographic descriptions. Shrines located in ridgetop saddles were likely places where people conducted rituals that required extensive open space. Perry (2007) rejects food preparation as a likely use for these sites because of the lack of evidence for other food processing or consumption activities. Signal fires are also an unlikely explanation since the sites have limited visibility from the ocean. Inter-visibility between sites suggests the importance of meaning in the landscape over utilitarian land use. Sacred sites on the island were probably linked to sacred sites on the mainland (Perry 2007).

The Franciscans reported that the feathered poles disappeared after everyone was baptized. However, some Chumash people still erected feathered poles at shrines after the Mission Period. One of Harrington's informants reported that feathered poles were erected on the hill behind Mission San Buenaventura at Christmas (winter solstice) time. Similarly, one of Henley's informants said that people still erected feathered poles during the winter solstice ceremony in the 1870s (Hudson and Blackburn 1986:84-85, 95; Gamble 2008:215).

CHAPTER 3: MISSIONARIES AND INDIGENOUS PEOPLE IN COLONIAL ALTA CALIFORNIA

Colonial Alta California: Political Organization and the Mission System

Starting in 1769, Spain extended its existing chain of Baja California missions into Alta California (the modern U.S. state of California) (Lightfoot 2005:51-52). Part of the purpose of this expansion was to defend the frontiers of New Spain from other encroaching European powers (especially Russia and England) and antagonistic natives. Spanish military and religious institutions planned the colonial settlement of Alta California (Voss 2008:54-55). The military was in charge of protecting the frontier of the Spanish empire from other European powers, and the Catholic Church was in charge of managing the indigenous people (Duggan 2004:9).

Junípero Serra, the ambitious first Father President of the Franciscan missionaries in Alta California, divided the Alta California coast into four presidio districts (San Diego, Santa Barbara, Monterey, and San Francisco), each anchored by a fort/mission pair (Lightfoot 2005:55). Spanish and later Mexican Alta California was ultimately managed through a system of 21 missions, four presidios (military outposts), and three pueblos. Two padres and six soldiers managed the hundreds to thousands of indigenous neophytes (baptized indigenous people) at each mission (Lightfoot 2005:3-5).

Serra and the Franciscans in Alta California embraced a medieval worldview and enforced strict discipline of indigenous neophytes and themselves in their effort to create utopian communities of indigenous agriculturalist peasants obedient to Catholic ideals (Aviles and Hoover 1997; Hackel 2013:xiii-xiv, 164-166, 199-201). The Franciscans viewed baptism as an irrevocable life-long commitment to Christianity—neophytes were permanently obligated to adhere to Catholic norms (Lightfoot 2005:70). Missionization was part of “directed culture change,” the attempt of a dominant culture to impose its lifeways and ideology on a subordinate culture. The Franciscans used agricultural and craft labor to enculturate indigenous people into Catholic peasants (Lightfoot 2005:20, 50). Daily life at the missions followed a strict schedule, which contrasted sharply with the flexible lifestyle that indigenous hunter-gatherers had practiced in Alta California (Sandos 2004:79-80).

Mission Organization and Surveillance

Mission construction started with a chapel, housing for the padres, and infrastructure for agriculture and neophytes (Aviles and Hoover 1997; Webb 1952:29). To facilitate surveillance, all dormitory rooms faced the inside of the quadrangle, and there were only a few paths between the quadrangle and the outside (Lightfoot 2005:62; Webb 1952:103). In order to regulate neophyte sexuality, the padres segregated neophytes by sex at night (Reid 1968:85; Webb 1952:27-29). According to Apolinaria Lorenzana (2006:173) and Eulalia Pérez (2006:107), colonists who lived at Mission San Gabriel, the single men and single women were locked up in separate quarters every night. “The missions resembled penal institutions in many respects, with the practice of locking up some neophytes at night and restricting movements outside the mission grounds, the use of corporal punishment, and the relatively tight control of behavior” (Lightfoot 2005:62).

Life each day in the missions began with the ringing of the church bell at dawn to call everyone to Mass. Daily life then proceeded with roll call, communal meals, and work, all governed by the tolling bell (Lightfoot 2005:56; Lorenzana 2006:173-175; Reid 1968:94; Sandos 2004:8, 49; Webb 1952:35, 40). Although neophytes did not work on Sundays or Feast Days, they had to attend Masses and prayers for as much as five hours (Lightfoot 2005:60).

The Franciscans wanted to maintain their control of the missions and neophytes and therefore managed state-mandated elections such that their most trusted neophytes became *alcaldes* and *regidores* (neophyte municipal officials) (Hackel 2013:214-217). At Mission San Luis Rey, Tac (2011:146-147; 182-183) noted that the missionaries chose the *alcaldes* based on their behavior. He recalled that the *alcaldes* served as communicators between the padres and the rest of the neophytes, announcing labor plans and punishing those who did not fulfill their work duties. According to Lorenzo Asisara, a neophyte at Mission Santa Cruz, the *alcaldes* were the padres' spies, who reported infractions and sometimes meted out punishment (Amador and Asisara 2005:118-123). In return, the *alcaldes* received preferential treatment in the form of better housing, extra food and goods, and exemption from corporal punishment. This system helped the padres undercut united resistance among the neophytes (Lightfoot 2005:71-72).

The enculturation system of the missions was designed to spatially break neophytes' ties with their homelands and hunter-gatherer cultures. Missionaries favored *reducción* and *congregación* policies to bring hunter-gatherers into sedentary mission communities. The Franciscans considered *reducción* and surveillance critical to controlling neophytes' contact with unbaptized natives and with Hispanic colonists (Lightfoot 2005:22, 63-65; Panich and Schneider 2015). Neophytes were not allowed to leave the mission unless permitted by a padre (Hackel 2013:199-200; Webb 1952:27, 49).

Such policies had a profound effect on indigenous communities who formed their identities in relationship with the landscape through their myths and oral histories (Lightfoot 2005:22).

Initial Conversion in the Missions

When indigenous Alta Californians first entered a mission, they were classified as *catecúmenos* and joined catechism in preparation for baptism (Lightfoot 2005:70). Since the Franciscans viewed indigenous people like children, they taught a simple children's catechism focused on memorizing the main Catholic prayers and concepts (Geiger and Meighan 1976:53-55; Hackel 2013:199; Sandos 2004:46; Webb 1952:47). Once baptized, the *catecúmenos* became neophytes.

Sandos (2004:xiv) argues that Serra's zeal for baptism meant that indigenous neophytes in Alta California were expected to adhere to strict Catholic ideals after minimal religious instruction. Baptized neophytes were considered full converts to Christianity and therefore responsible for sinful behavior. Franciscan views of neophyte sinfulness failed to acknowledge that the conversion process occurred largely after baptism (Reid 1968:74-76; Sandos 2004:xv; Webb 1952:27).

Discipline in the Missions

The Franciscans sought to not only convert indigenous people to Christianity, but to transform them in body and mind from autonomous hunter-gatherers to compliant Hispanic peasant farmers (Aviles and Hoover 1997; Lightfoot 2005:50, 60; Sandos 2004:8). Labor structures were integral to everyday life at the missions. The Franciscans aimed to break the perceived immoral idleness of indigenous hunter-gatherers through strict European practices of routine labor (Lightfoot 2005:24-25; Sandos 2004:79-80, 101; Webb 1952:27). Lightfoot (2005:66-67) characterizes the mission labor system as forced communal labor—a cross between communal labor and slavery. Everyone was required to work. Labor was usually segregated by gender: men worked in agriculture, herding, crafts (e.g., carpentry and blacksmithing), and construction, whereas women worked on domestic tasks, child-rearing, cooking, and crafts such as basket-making and textiles.

The missionaries sought to instill idealized European Christian habitus so that Christian precepts guided every aspect of indigenous people's lives from how they fed themselves to their marriage practices to how they raised their children (Lightfoot 2005:60; Sandos 2004:8). The Franciscan padres (literally "fathers") were legally in charge of their neophyte "children" (Sandos 2004:53). Neophytes were required to comply with all of the padres' instructions in behavior and thought (Hackel 2013:199-200). The Franciscans disciplined sinful thoughts and behavior through confession and corporal punishment (Amador and Asisara 2005:120-123; Hackel 2013:222; Sandos 2004:50; Webb 1952:49). Missionaries tried to suppress the oral tradition of Chinigchinich so that it could not be passed down to future generations. Missionaries particularly targeted shamans, who often fled the missions (Hardy 2000).

Foucaultian discipline was an integral part of the missionaries' enculturation plans. In contrast to Foucault's (1984:193-196) definition of deviance based on norms, discipline in the missions was based on deviation from Hispanicized Christian ideals. The Franciscans attempted to teach indigenous Alta Californians to live "under the bell" and accept idealized European values and practices regarding religion, time, and labor (Hackel 2013:199-200; Lightfoot 2005:82).

In the missions, the Foucaultian examination was obligatory confession, during which the padres elicited information about neophytes' thoughts and behaviors to determine if they conformed to Christian concepts of right and wrong. The goal of confession was to instill remorse for sins in order to to receive divine forgiveness. Both forbidden behavior and the desire to engage in forbidden behavior were sins (Sandos 2004:10; Señán 1967:10-11, 16-17). The padres prepared *confesionarios* (confessional aids) in local indigenous languages. The *confesionarios* were lists of questions about possible sins (including sexual misconduct and indigenous spiritual beliefs) that the padres asked neophytes during confession (Sandos 2004:96-97).

José Señán's *confesionario*, written in Spanish and Ventureño Chumash at Mission San Buenaventura around 1815-1819, asks questions about possible sins (Beeler 1967:2). Señán questions a penitent's belief in indigenous rituals:

> Have you ever believed in dances, and do you scatter seeds and beads (useless practices of the heathen)? Tell (me): when you danced, did you believe it to be true (that) you wouldn't get sick? ….Tell (me): did you believe that by scattering seeds, etc. you would kill fish? That there would be plenty of seeds, and deer, and rabbits, and jackrabbits? [Señán 1967:25].

Public punishment and humiliation were intended to foster the appropriate sense of guilt and personal responsibility for sin (Sandos 2004:50). Apolinaria Lorenzana, a colonist at Mission San Gabriel, recalled:

> Indians who did not fulfill their obligations or were somehow delinquent were punished by the *alcaldes*, who received orders from the Father. Punishments were based on the seriousness of the offense and included being locked up in a cell, with or without shackles, or being placed in stocks. If the offense was somewhat serious, the person would be whipped. Rarely did the whippings exceed twenty-five. [Lorenzana 2006:176]

Reasons for Indigenous People to Join Missions

Although there is debate regarding the level of coercion, the Franciscans recruited some new converts through exchanging gifts and performing public ceremonies (Bean and Vane 1978:669; Lightfoot 2005:84; Webb 1952:25-26). Initially, most converts likely had personal reasons for joining the missions, including material (rather than spiritual) benefits and dissatisfaction with their status in their communities. Some converts were shamans interested in new spiritual powers. Others were children and youths running away from their families. Wanting to form an alliance with the mission, some indigenous families handed over a child to the padres (Bean and Vane 1978:669; Lightfoot 2005:85-86). The Franciscans strategically focused on first converting tribal chiefs and their children, seeing them as the best way to eventually convert the rest of the tribe (Aviles and Hoover 1997; Webb 1952:29). For example, Tac (2011:144-147) describes the first meeting between a Franciscan missionary and the Luiseño. The missionary gave gifts to the Luiseño chief, who convinced his people to treat the missionary as a friend rather than kill him.

After the poor conditions of mission life became apparent, reasons for joining the missions changed. Colonial soldiers brought indigenous women and children to the missions and brought the indigenous men to the presidios for public flogging and forced labor. Some indigenous people joined missions to escape the violence, and others fled to remote areas (Voss 2008:152-156). Some indigenous women may have chosen to join the missions in the hope of protection from the unofficial—but common—campaign of military rape by colonial soldiers, which is one possible reason for the higher numbers of female neophytes than male neophytes during the early years of the missions (Hurtado 1999:13, 16). Mission agriculture, irrigation, and the introduction of Old World plants and animals disrupted the local subsistence sources for hunter-gatherers. Drought aggravated the situation, and joining the missions became a means to avoid famine (Lightfoot 2005:86-87).

Effects of Colonization on Indigenous People in California

The Franciscans' goals conflicted with the stark reality of indigenous people's hunter-gatherer cultures, decimating mortality rates due to epidemics, and the inadequacy of mission agriculture to support mission residents (Hackel 2013:148, 238). Key colonial impacts on indigenous Californians included Old World epidemics that devastated indigenous populations, colonial livestock whose grazing degraded traditional local food sources, and the 1803 colonial edict requiring neophytes to live at the missions instead of their home villages (Dartt-Newton and Erlandson 2006; Sandos 2007). Furthermore, the severe epidemics meant that many indigenous communities lost important cultural knowledge through the deaths of many of their members (Bean and Vane 1978:670;

Lightfoot 2005:27). Some scholars (Hackel 2013:238; Dartt-Newton and Erlandson 2006) argue that the Spanish colonial system left indigenous people few realistic options and effectively forced them to join the missions. However, indigenous people did have some choices regarding joining the missions and complying with or resisting the missionaries' demands.

The coercive discipline intended to enculturate the neophytes at the missions did not produce the idealized Hispanic peasants as intended. Conversion in the missions was a complex process, and both the Franciscans and indigenous neophytes created a new mission culture through the interplay of their intentions and actions in the development of discipline, resistance, and adaptation (Sandos 2004:176-184). The Franciscans wanted to transform neophytes into perfect Christian farmers in spite of the fact that perfect Christian farmers did not exist in Europe (Lightfoot 2005:82). Indigenous people were not a blank slate. They adjusted in different ways to life under the bell, adopting new customs and adapting older practices to their new world. Some indigenous practices persisted at missions even after the end of the Mission Period (Gamble 2008:215; Hudson and Blackburn 1986:85, 95; Lightfoot 2005:110). Indigenous people adapted to the structure of mission life, at times complying with or resisting discipline and in the process developing new lifeways as they both responded to and shaped the changing world of Alta California.

Indigenous responses to the mission system ranged from acceptance to violent resistance. Although indigenous people did not have complete control of their lives during the colonial period, they still made choices based on the options at hand. Neophytes formed communities in the missions through shared meals, dances, games, and gambling, often integrating people who had come from different indigenous communities. These communities did not abandon all of their perceived "non-Christian" practices or become the idealized Catholic peasants as the missionaries wanted (Bean and Vane 1978:670; Lightfoot 2005:88, 94, 110). For example, at Mission Santa Clara, the *ranchería* for married neophytes and their families was near the mission, but still allowed for some autonomy in domestic use of space. Some pits in the *ranchería* were likely used in indigenous ceremonies, and three of these pits conform to known indigenous mourning rituals that include destruction of possessions (Panich and Schneider 2015).

Though spatial control of movement was an integral part of the Spanish missionization program, indigenous people within the missions were connected to social and economic networks outside the missions. At the CA-KER-74 site in inland Kern County, California, some indigenous burials included Catholic medallions, glass beads, and shells beads, all of which came from the coast. "While the Catholic religious objects from these sites no doubt reflect direct or indirect contact with missionaries, the burial of such objects in independent villages speaks to how native people contextualized such objects within familiar frames of reference" (Panich and Schneider 2015). Indigenous people traded glass and shell beads in vast economic networks that included colonial settlements and indigenous communities beyond the effective colonial frontier that the colonizers perceived (Panich and Schneider 2015).

During the early Mission Period, active resistance involved warfare against colonists. Later resistance included murder plots against missionaries and livestock raiding (Amador and Asisara 2005:78-87; Beebe and Senkewicz 1996; Lightfoot 2005:89; Sandos 2004:55-61). The Franciscans recorded the persistence of indigenous practices such as shamanic healing rituals and mortuary traditions. Although the Franciscans supervised Christian burials, grave goods included indigenous artifacts such as shell beads (Kroeber 1908; Lightfoot 2005:92, 108).

Many neophytes fled the missions to return to their ancestral lands or inland refuges (Lightfoot 2005:64-65; Reid 1968:80; Sandos 2004:164). About 5-10% of neophytes successfully escaped the missions; many more were recaptured (Lightfoot 2005:90). Many neophytes died outside of the mission, and some were buried in indigenous communities. By manipulating the temporary leave system of *paseos* and outright fleeing missions, indigenous people exercised agency to maintain and reinvent relationships with communities outside the missions (Panich and Schneider 2015).

Southern California Indigenous Groups and Missions

The missions in southern California (listed in Table 1 from south to north) consolidated people from different indigenous ethnic groups. The locations of the southern California missions and the Channel Islands are shown in Figure 1.

Table 1: Southern California Missions: Founding Dates and Main Ethnic Groups

Mission	Founding Date	Main Ethnic Groups
San Diego de Alcalá	1769	Ipai, Tipai, Luiseño, Pai Pai, Kiliwa
San Luis Rey de Francia	1798	Luiseño, Ipai, Cupeño, Cahuilla
San Juan Capistrano	1776	Acagchemem (Juaneño), Luiseño, Gabrieliño (Tongva)
San Gabriel, Arcángel	1771	Gabrieliño (Tongva), Serrano, Cahuilla
San Fernando Rey de España	1797	Fernandeño, Tataviam, Ventureño Chumash, Vanyumé, Kitanemuk
San Buenaventura	1782	Ventureño, Island Chumash
Santa Bárbara, Virgen y Mártir	1786	Barbareño, Ineseño, and Island Chumash
Santa Inés, Virgen y Mártir	1804	Ineseño and Island Chumash, Yokuts
La Purísima Concepción de María Santísima	1787	Purismeño, Ineseño, and Island Chumash, Yokuts
San Luis Obispo de Tolosa	1772	Northern Chumash, Yokuts

(Kimbro and Costello 2009:16-17)

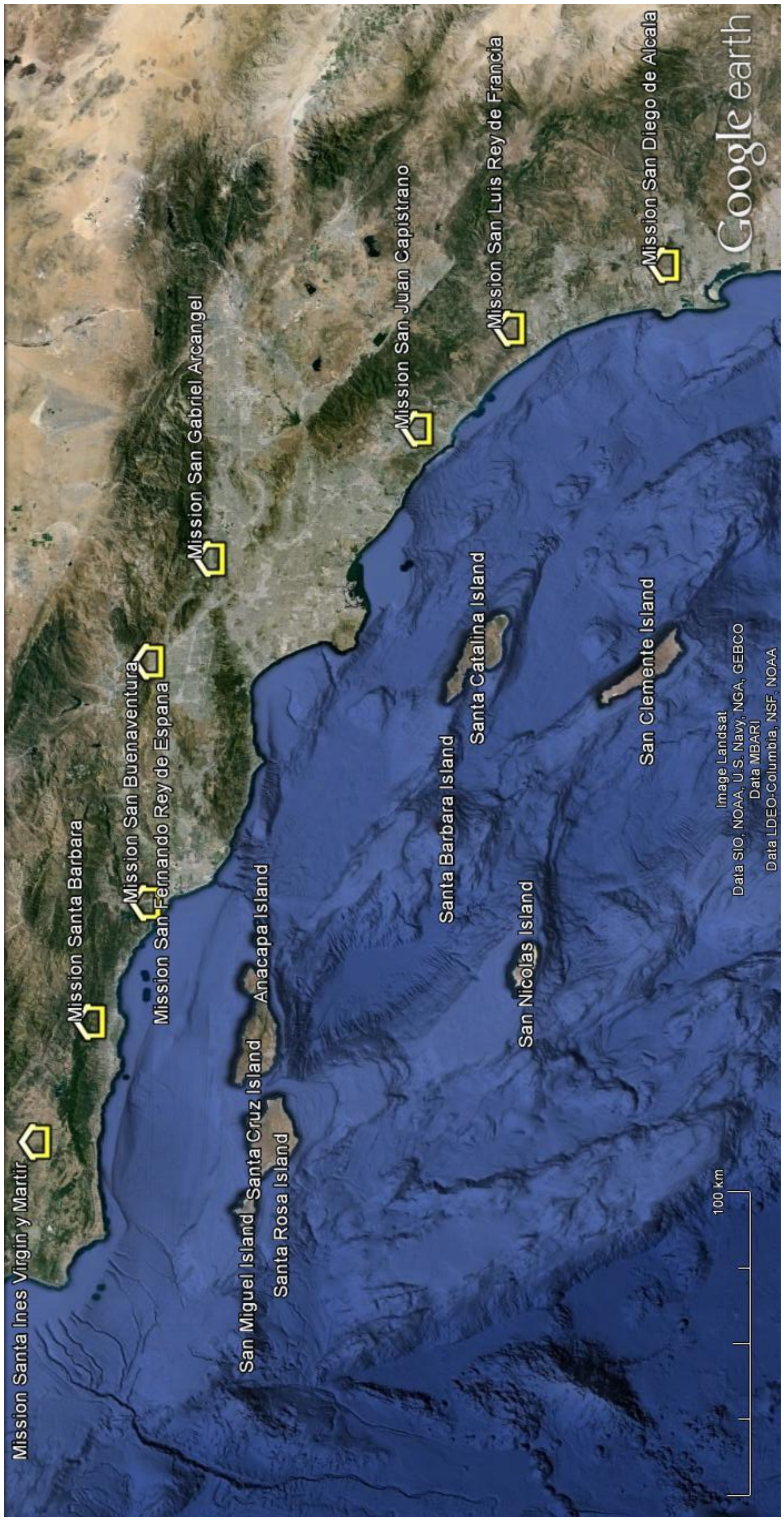


Figure 1: Map of Southern California Missions and Channel Islands

The Spanish cut down oak trees to construct buildings and produce firewood, which destroyed the acorn sources that the Tongva and neighboring ethnic groups had relied on. With traditional sources of food destroyed during colonization, many Tongva joined the missions to avoid starvation. The demographic devastation of Old World diseases endangered Tongva social cohesion (Sandos 2007). According to Tac (2011:182-183), an epidemic had killed 2000 of the 5000 people in Luiseño territory. In 1795 Luiseño leaders recruited the Spanish missionaries to build a mission for them, perhaps in hope of gaining economic power and medical help for the diseases that were ravaging their community (Haas 2011:5).

Although many southern Californian indigenous people joined the missions, they did not all embrace the missionaries' teachings. For example, Tac (2011:212-213) wrote that the Gabrieliño did not feel shame (which the sacrament of confession was meant to instill) and resisted Catholicism. Boscana (1978:80) lamented that even the Juaneños who had been raised as Christians often sought out indigenous healers and rejected confession when near death. After the Mission Period, Robinson reported that he had witnessed some of the Juaneño rituals Boscana had described: "They have been careful to preserve the traditions and customs of their ancestors, and are permitted to indulge in the observance of them on their feast days, which occur several times during the year" (Robinson 1978:15).

Toypurina's Revolt at Mission San Gabriel: 1785

Some Tongva were reluctant to confront the Spanish, but others reached their breaking point. Nicolás José, a neophyte and *alcalde* at Mission San Gabriel, was not permitted to perform the Tongva mourning ceremony for his dead son. He therefore approached Toypurina, a powerful, high-status shaman, to organize a revolt against the Spanish (Sandos 2007). Nicolás José gave Toypurina beads to convince her to recruit the unconverted indigenous people while he recruited neophytes (Beebe and Senkewicz 2007). Toypurina was equally motivated to attack the Spanish and revitalize the Chinigchinich religion. She had a *Datura*-induced vision of the Tongva destroying the Spanish in fulfillment of Chinigchinich's edicts (Sandos 2007). Indeed Toypurina may have been a pivotal promulgator of the Chinigchinich religion during its intensification when many Tongva were forced to join the missions in the 1780s (Lepowsky 2004:19). Many Tongva people believed she could kill people remotely, and her elite shamanic status encouraged indigenous people to join the revolt (Beebe and Senkewicz 2007; Sandos 2007).

The revolt at Mission San Gabriel occurred on October 25, 1785. When the revolt was exposed and failed to expel the Spanish, the revolt participants were severely punished (Beebe and Senkewicz 2007; Sandos 2007). In her testimony during the judicial proceedings, Toypurina "said that it is true that she ordered Chief Tomasajaquichi to go and persuade the Christians not to believe the Fathers, but rather only her. She advised him to do this because she was angry with the Fathers and with all the others at this mission, because [they] are living here on their land" (Beebe and Senkewicz 2007).

In his verdict, Governor Pedro Fages decided that the prisoners were guilty and that Nicolás José and Toypurina were most at fault for organizing the revolt. They were sentenced to banishment to northern missions far from Mission San Gabriel so that they could not incite resistance again. The rest of the accomplices in the revolt were publicly flogged for their “wickedness” (Beebe and Senkewicz 2007).

After the trial, Fages reported that Toypurina told the missionaries that she wanted to convert to Christianity because she feared retribution from disgruntled followers in the revolt who threatened to kill her (Beebe and Senkewicz 2007). She and her son were baptized (Sandos 2007). Sandos argues that Toypurina’s “accepting baptism was a way to begin the process that a social psychologist describes as ‘protective ingratiation.’ It is a strategy by which a subordinate assumes the behavior the superior wants in order to minimize or avoid further interference in the subordinate’s life” (2004:6). Indigenous people had to navigate the colonial structure in their daily lives (Lightfoot 2005:19). Through their everyday choices, they often made compromises to enhance their survival by at least outwardly complying with colonial authorities. “Toypurina’s case illustrates the ambiguities inherent in social control. To some degree behavior can be modified, but securing the assent of mind and heart is difficult to determine” (Sandos 2004:7).

CHAPTER 4: THEORIES OF RELIGION: DEFINITIONS, AMALGAMATION, CONVERSION, AND REVITALIZATION

Definitions and Dynamics of Religion

The anthropological definitions of religion are convoluted and expose the biases of different anthropologists. According to Durkheim (1995:227), religion does not explain the natural universe; it explains the social universe. Therefore, activities whose manifest function is to strengthen ties between the faithful and the divine have the latent function of strengthening the ties between the individual and society. Clifford Geertz (1973:123-129) argues that every religion uses a system of symbols to make abstract concepts about the nature of the world concrete, understandable, and meaningful for its adherents. Through its symbolic system, each religion encourages a particular pattern of behavior and values (ethos) that is logical and in harmony with its world view. Fogelin defines religion as an "abstract symbolic system consisting of beliefs, myths, and doctrines" (2007). In Asad's (1983) view, religious practices must express a meaning. Armin Geertz (2004:238) argues that a key function of religion is to serve as a creative means to establish and maintain meaningful, unifying relationships in spite of inconsistences.

Religion and Power

Multiple scholars (Äikas and Salmi 2013; Asad 1983; Boivin 2009; Kristjánsdóttir 2015; Mitchell and Mitchell 2008; Watanabe 1990) criticize Clifford Geertz's (1973:123-125) description of religion, which focuses on symbolic systems of meaning without considering the roles of power, practice, and the material world. The emphasis on meaning reflects a Christian bias in the study of religion, which elevates belief over practice in contrast to many non-Christian religions (Asad 1983; Boivin 2009). A broader perspective is necessary because religious beliefs and practices must be understood in their historical and cultural context and cannot be forced into a universal definition (Äikas and Salmi 2013; Asad 1983; Watanabe 1990). In Alta California, the power dynamics of colonialism profoundly affected religious interactions in the missions.

Asad (1983) argues that Geertz does not account for how symbols acquire meaning, which must be understood in the context of power. In his study of medieval European Christianity, Asad draws on St. Augustine's position that people's choice to accept Christianity could be shaped by God through teaching and punishment—i.e. discipline. Discipline is a tool of power, which shapes religious beliefs and practices through coercion and thereby primes the individual to accept a particular set of religious beliefs and practices. Such power ranges from "laws (imperial and ecclesiastical) and other sanctions (hellfire, death, salvation, good repute, peace, etc.), to the disciplinary activities of social institutions (family, school, city, church, etc.) and of human bodies (fasting, prayer, obedience, penance, etc.)" (Asad 1983). The world of religion necessarily interacts with the practical world of everyday living. It cannot be excised from its material context (Asad 1983; Boivin 2009; Kristjánsdóttir 2015). Therefore religious symbols must be assessed within the broader milieu of of social life (Asad 1983).

The missions were based on the premise that people could be molded into model Christians regardless of their background. This holistic metamorphosis required techniques of power that could access and change both the body and mind of individuals

(Foucault 1984:60-67). These techniques, which Foucault (1984:181-182) named disciplines, are a collection of small processes of coercion that make a subject obedient and receptive to acquiring the authority's desired characteristics. Disciplinary power requires observation to determine compliance with norms and judgment based on the level of compliance. In disciplinary power, observation and judgment are combined in the examination to determine if the subject has been transformed as desired (Foucault 1984:188-189). The examination combines surveillance and punishment in the effort to ascertain the progress of normalization and coerce deviant behavior to conform to norms. The knowledge an authority learns about a subject through examination is used to track the progress of discipline and determine corrective measures if the subject does not meet expected goals (Foucault 1984:197-202).

Using the lens of Foucault (1984:216-220), the epitome of disciplinary technology is seen in the panopticon, an idealized prison designed such that all inmates can be watched at all times. Since inmates can never be sure when they are under surveillance, they learn to watch themselves and comply with prison rules (Rabinow 1984:19). However, the missionaries' surveillance of indigenous people had limits. San Clemente Island was far from the reach of the mission bell and can therefore reveal how Tongva people practiced rituals without the direct influence of missionaries.

Belief and Practice

"Belief" and "practice" are contentious terms within the broader scholarly debate on the definition of religion. Religion encompasses both beliefs and rites, each of which influences and is influenced by the other (Durkheim 1995:299). Fogelin sees ritual as "a form of human action that leaves material traces" (2007). Asad (1983) considers ritual the practice of belief rather than a means to create belief. In contrast, Mitchell and Mitchell (2008) argue that the linguistic approach to religious meaning does not adequately account for the experience of religion in the body through practice. Belief is not represented by action; it is performed through action. Belief is disciplined into bodies through practices such as abstinence for certain foods and adopting accepted postures during worship, such as kneeling. Thus adherents of a particular religion acquire the habitus of that religion.

Boivin (2009) argues that ritual, as part of religious practice, creates religious experiences and understandings beyond linguistic meanings. Symbolic systems of meaning are not purely mental models (as many interpretivist anthropologists assume) because people physically interact with their environment and each other. Physical engagement with the world is one of the ways people learn outside of language, and it depends on the material properties of the world. The definition of religion must therefore assign equal importance to belief and practice (Boivin 2009). Äikas and Salmi (2013) argue that the practice of ritual is an integral part of religion that is not necessarily dependent on religious beliefs. Therefore changes in practice reflect changes in religion regardless of whether beliefs change. Furthermore, religion, ritual, subsistence, and social order are frequently intertwined, and changes in one are likely to cause changes in the others (Äikas and Salmi 2013).

Conversion and Discipline

Conversion involves more than devotion to a new religion. Kristjánsdóttir (2015) draws on Foucault's theory on power relations and everyday resistance to show how Christian conversion in eleventh-century Iceland was a process through which people adapted and integrated Christian rules and norms into their daily lives. All people in Icelandic society exercised varying degrees of power in this process of reciprocal social communication and negotiation as they confronted the conflict between pre-Christian and Christian lifeways. Becoming Christian therefore involved negotiation through the interactions of ordinary people, not simply the dictates of political and religious authorities.

Kirsch (2004) criticizes anthropologists' Christian bias in their assumption that belief is a permanent state rather than a dynamic process. For example, religious pluralism (the ability to affiliate with multiple religions simultaneously) describes the Gwembe Tonga's highly fluid religious environment. Thus, in contrast to the Franciscans' perspective, conversion does not necessarily entail abandoning one religion in favor of another. Similar to the Gwembe Tonga, White's (1957; 1963) Luiseño informants distinguished Christianity and the Chinigchinich religion without perceiving a need to choose one over the other.

Understanding the conversion process requires understanding religious knowledge and the cognitive process of learning a religion. Religious knowledge is composed of "three cognitive entities: (1) symbols, (2) categories into which those symbols are arranged, and (3) organizational rules which relate the categories of symbols" (Light 2000). Outward symbols of religion, such as deities, appear to be the most essential aspects to religious adherents because people develop emotional connections with them. Symbols do not necessarily have the same meaning for all adherents of a religion. The way people categorize symbols and define the categories imbues symbols with meaning. Thus truly radical religious change happens when the categorization of symbols and their meanings change (Light 2000).

Learning a religion is much like learning a language. One's understanding of a word grows more precise as one learns other words that are related to the first word. Reflecting on his initial childhood association between the word "temple" and a vague sense of the numinous before he grasped the full definition, Light explains that "human memories are layered rather than entirely replacive, so that even today the word *temple* carries an extra load of meaning for me, despite my conscious understanding of that term" (2000). Like Proust's madeleine, words and experiences trigger memories. In ritual experiences, these triggered memories gain layers of meaning as they are embedded within religious knowledge. Through repeated religious experience, an individual's religious knowledge grows increasingly sophisticated and precise. Just as an individual's level of understanding of a religion changes over the course of a lifetime, the group's understanding of religion is in constant flux (Light 2000).

Religious Traditions: Continuity and Change

Understanding religious interactions in the past requires untangling the development of religious traditions. Tradition is the process of assigning meaning to practice. An individual becomes conscious of meaning in actions beyond utilitarian concerns and imbues those actions with symbolism. Traditions are symbolic practices that people create in order to have a sense of long-term stability in the face of a changing world (Hobsbawm 1983:1-2). However, one cannot assume that traditions remain constant. Tradition is not a "thing"; it is a constantly changing social construction in which people in the present interpret and assign symbolic meaning to the past (Handler and Linnekin 1984). Furthermore, Handler and Linnekin's work show the importance of understanding the context of oral histories and ethnographic research conducted decades after the Mission Period. Though these sources of data are important, they cannot be assumed to fully represent practices and meanings from the pre-Contact or Mission Periods.

Practices and their meanings change in new contexts. In particular, religions change as people adapt and create traditions in beliefs and practices to address their present needs. Hobsbawm's (1983:1-2) emphasis on the use of tradition to create a sense of long-term stability provides a possible lens to explore the meaning of religious traditions, especially in the context of revitalization movements. Rather than treating continuity and change as opposites, scholars should view them as entangled with each other in "changing continuities" (Panich and Schneider 2015). In the practice of identity, individuals attribute meaning to themselves and the world (Friedman 1995:86). People create identity (including religious identity) through their selective consumption of cultural traits and products (Friedman 1990:312-313). Thus the material culture that people choose or refuse to incorporate in different facets of their lives is part of the practice of identity. In colonial contexts, indigenous choices and constraints in using the colonizers' and native material culture can reveal the power dynamics of identity. Recognizing that identity is a dynamic cultural construction, Panich (2010) argues that the persistence of indigenous identity does not necessarily mean a static retention of pre-colonial practices. Instead, some indigenous communities preserved their identity through reimagining cultural practices and social ties. Persistence of identity therefore incorporates cultural change.

The meanings of rituals change over time, and their purposes change depending on their context. Light (2000) argues that religious knowledge normally incorporates diverse source materials and that religious practice adapts to local conditions. “What we share with each other within our human groupings—and what thereby gives us communal unity and belongingness—is a common set of symbols. How we organize those symbols and the power of process that we each attribute to them may or may not be fully shared” (Light 2000). The differences in individuals’ understanding and organization of the shared set of symbols depends on the different life experiences of different individuals. Although consistent symbols suggest religious continuity over space and time, the categorization of those symbols—and hence the meaning of the religious system—varies over space and time and between individuals (Light 2000). Thus, even if ritual practice appears continuous and unchanging, the meaning of the same ritual can change.

Religious Amalgamation

Borders (physical and metaphorical) are places where mixing occurs, not division between elements (Lambropoulos 2001). Cross-cultural relationships are particularly dynamic, and people both respond to and influence social change (Äikäs and Salmi 2013; Kristjánsdóttir 2015; Watanabe 1990). Culture and identity evolve as people improvise during the course of constant communication and interaction with people of different classes, genders, religions, and cultures (Kristjánsdóttir 2015).

Scholars have used many terms to describe the process of cultural amalgamation, including syncretism, creolization, bricolage, *mestizaje*, and hybridity. Liebmann (2013:27, 32) cautions that all of the terms for cultural convergence are designed to classify cultures and are therefore social constructs used by analysts, not a reflection of "natural" types. Therefore these concepts should be used to analyze and interpret, not merely describe. For example, in the ongoing process of combining African and Christian elements, Afro-Caribbean religions imbue these elements with new meanings that change based on the evolving needs of individual adherents:

> The inclusion of Christian elements was not just a replacement of the missing or suppressed religious icons but refers to a complex process of memory. The gaps caused by the slave trade and the time of slavery were filled with elements at hand, in the case of religion with Christian elements. But they did not remain being Christian elements; they became central parts of the Afro-Caribbean religions. [Schmidt 2006]

In postcolonialism, hybridity focuses on colonial cultural convergence that does not fit into a distinct cultural category. In hybridity, cultural ingredients are reimagined, not simply combined (Liebmann 2013:30-31). In contrast to the analogy of tossing a salad in which the lettuce, tomatoes, and cucumbers are mixed together but retain their individual properties, the process of cultural hybridity is more like baking a cake in which flour, eggs, and sugar are combined and transformed through the baking process into something new that does not resemble the original ingredients. Furthermore, by directly addressing the uneasy process of negotiating unequal power relations, the concept of hybridity accounts for conflict and resistance (Liebmann 2013:31).

Religious dynamics are more complicated than the common unidirectional focus on evangelizers converting the evangelized (Graham 1998). It is important to note that adherents of a religion do not all respond the same way to outside pressures (Pye 1994). As people from different cultures interact, they engage in an ongoing exchange of religious beliefs and practices (Äikäs and Salmi 2013; Kristjánsdóttir 2015). Graham (1998) cautions scholars against assuming simplistic dichotomies of indigenous acceptance or rejection of Christianity and instead recommends examining how indigenous people reevaluated their existing cosmologies and in turn changed Christianity. In colonial contexts, syncretism can be instigated by actors from below (as part of resistance, colonized people incorporate meaningful elements of their culture into the dominant culture) or from above (colonizers use syncretism to promote their culture and encourage colonized people to accept it) (Äikäs and Salmi 2013). The elasticity of colonizers' definition of "acceptable" religious practice affects the degree of their tolerance of syncretism. In turn, this level of tolerance affects colonized people's options as they decide how to engage colonizers by working within the colonial system or resisting such strictures. Studying syncretism is therefore a means to assess power dynamics in colonialism.

Robbins (2011) uses the concept of crypto-religion (the idea that converts to Christianity either fake conversion or still use their traditional religion as the core of their new religion) to argue that scholars must analyze syncretic religions to determine which source religion's set of elements forms the core of the syncretic whole. The anthropologist must determine which set of beliefs and practices forms the core without assuming that the older, pre-Christian set is the core. His approach is useful for addressing scholarly assumptions about indigenous conversion.

According to Robbins (2011), elements of a source religion that conflict with the new syncretic core are discarded. At this point, however, Robbins does not consider the fact that many religions (including Christianity) contain contradictions. Although all religions include elements from different sources, most religions portray their cosmologies as consistent, permanent, and immutable wholes (Light 2000). "Understanding human religious behavior must include understanding that contradiction and accounting for the human capacity to absorb and assimilate multiple, often contradictory, sources while interpreting their sum as unitary and frequently as derived from the same origin" (Light 2000). Adherents of a religion are often unaware of syncretic acculturation in their religion (Pye 1994). Internal consistency is not as important as addressing the needs of adherents. Indeed, Graham (1998) criticizes scholars for not adequately addressing the development and internal contradictions of European Christianity, which affected its introduction in the New World. European Christianity was already syncretic, and Europeans therefore had no greater understanding of Christianity than indigenous Christians in the New World.

Syncretism was common in New Spain. After Mission San Luis Rey was founded in 1798, translators rendered Catholic prayers and doctrine into Luiseño using Luiseño religious words and concepts (Haas 2011:5-6). Christmas celebrations varied across northern New Spain as missionaries and indigenous people reinterpreted local indigenous traditions to fit Catholic beliefs and practices. In the sixteenth century in central New

Spain, fray Pedro de Gante realized that traditional Nahua worship included singing and dancing. He therefore composed a song for Christmas glorifying Christ's virgin birth and coordinated a dance performance to explain Christian concepts. Since the Puebloans and Franciscans refused to use each other's languages, pantomimed dance-dramas were a key means to communicate Christian concepts. Puebloans also adapted their rituals to maintain group identity without incurring Spanish punishment. Indigenous artists at many missions created art, dances, and songs celebrating Christian concepts (Mann 2010). Given these examples, it is equally plausible that indigenous religions incorporated aspects of Christian beliefs and practices.

Revitalization Movements

Wallace (1956) outlines a framework for understanding revitalization movements, which attempt to fundamentally change unsustainably stressful cultural systems. "A revitalization movement is defined as a deliberate, organized, conscious effort by members of a society to construct a more satisfying culture" (Wallace 1956). Revitalization movements are different from incremental chain-reactions that gradually change cultures with little conscious effort. Instead, revitalization movements occur when people intentionally try to abruptly change an entire cultural system.

In order for a society to function, every individual within the society must have a mazeway: a mental image of the society, its culture, the individual's place in society, and culturally acceptable ways to cope with stress. When an individual suffers severe stress that cannot be resolved by manipulating his or her existing mazeway, then the individual must either endure the stress or change his or her mazeway to mitigate the stress. A revitalization movement happens when a group of people unite in their attempt to reduce stress by changing the mazeway and underlying system (Wallace 1956).

Revitalization processes involve a series of stages. In the steady state, the existing social system adequately addresses individuals' stress. During the stage of increased individual stress, some individuals within a society suffer severe stress because the society's stress-reduction techniques do not satisfy their needs. At a certain point, an individual's stress becomes unbearable, and the individual will consider other options (Wallace 1956).

During the stage of cultural distortion, prolonged, severe stress causes different people to react in different ways. At this stage, a sense of unresolvable hopelessness overtakes many people as they see no solution to their problems in their current mazeway. In some cases, the period of cultural distortion results in a society's implosion. In other cases, a period of revitalization tries to relieve stress through radical changes to the social system. Typically one person, the prophet, has a vision of a new mazeway, often through a hallucinatory vision (Wallace 1956). "A supernatural being appears to the prophet-to-be, explains his own and his society's troubles as being entirely or partly a result of the violation of certain rules, and promises individual and social revitalization if the injunctions are followed and the rituals practiced, but personal and social catastrophe if they are not" (Wallace 1956).

The vision provides a sense of purpose and zeal that replaces the earlier hopelessness, and the prophet shares the vision with others, promising converts the protection of supernatural beings and the material benefits of the proposed new cultural system. People flock to the charismatic prophet's vision because the prophet appears to be a powerful leader who will protect and help them. In order to survive, a revitalization movement's organizers must be able to anticipate and counteract opponents' resistance, often by adjusting the revitalistic message to improve its chances of acceptance. During cultural transformation, a large enough proportion of society or its ruling population adopts the prophet's vision, and revitalization takes root with radical cultural change. If the group's cultural changes effectively reduce stress in secular parts of society, then they become the economic, social, and political norm, and a new steady state is established (Wallace 1956).

Actors use material culture to facilitate revitalization movements. For example, Jemez women changed ceramic styles in line with the nativistic and revivalist goals of the Pueblo Revolt (Liebmann 2012:127). In the New Mexico missions, people had made Spanish pottery forms, including a chalice, in the Black-on-white style. Though Black-on-white pottery was common among the Jemez as an ethnic marker before colonization, post-Revolt Jemez potters stopped making Black-on-white pottery, likely because it was a reminder of mission life that the Jemez wanted to expunge. In this case, erasing Spanish culture was more important than replicating the pottery style of their ancestors (Liebmann 2012:130-132).

Different types of revitalization movements include nativistic movements, revivalist movements, cargo cults, vitalistic movements, millenarian movements, and messianic movements. Nativistic movements try to eradicate foreign people or their culture, and revivalist movements intend to resurrect bygone practices of the group's ancestors (Liebmann 2012:109; Wallace 1956). Revitalization movements, such as the Pueblo Revolt, frequently occur in colonial contexts. Religion is integral to indigenous resistance, often providing the motivation to act and the vision of the desired future (Liebmann 2012:14, 213). Toypurina led a nativistic revitalization movement based on a vision from Chinigchinich, who promised to rid the Tongva of the Spanish menace that had overtaken their land and lives (Sandos 2007).

CHAPTER 5: SAN CLEMENTE ISLAND

Geography, Climate, Flora, and Fauna

As shown in Figure 1 in Chapter 3, the Southern Channel Islands (San Nicolas, Santa Barbara, Santa Catalina, and San Clemente) are located off the Pacific coast between San Diego and Los Angeles. Compared to the Northern Channel Islands (Anacapa, San Miguel, Santa Cruz, and Santa Rosa), the Southern Channel Islands are relatively far from each other and the mainland (Raab and Yatsko 2009:5). San Clemente Island is located about 32 km from Santa Catalina Island and 72 km from the mainland (Yatsko and Raab 2009:23-24). San Clemente Island covers an area of 148 km^2 (Raab and Yatsko 2009:8).

The Mediterranean climate of southern California is reflected in the small range of temperatures experienced on San Clemente Island. Microclimates on the island vary based on elevation and distance from the coast (Yatsko and Raab 2009:33). Fresh water is scarce, generally limited to that captured in sedimentary deposits (Yatsko and Raab 2009:24). Most of the island's plants are grasses and succulent scrub species such as cacti. The semi-arid climate meant that terrestrial food resources were limited, which strongly favored prehistoric islanders' focus on marine resources. Prehistoric people introduced several mammal species to the island, including the island fox (*Urocyon littoralis*), white-footed deer mouse, and dog. The rich resources of the intertidal zone included abalone (*Haliotis sp*.), mussels (*Mytilus sp*.), and gastropods (*Tegula sp*.). The rocky reefs and kelp beds supported many fish near shore, including sheephead. Pinniped rookeries along the Coastal Terrace supported sea lions (*Zalophus californianus*), elephant seals (*Mirounga angustirostris*), and seals (*Phoca vitulina*), which were important sources of meat and skins (Yatsko and Raab 2009:36-38).

Human Occupation

San Clemente Island was occupied at least 9000 years BP (Raab and Yatsko 2009:7). The Early-Middle Holocene transition, marked by the use of mortars and pestles (which were probably used to process plants such as acorns), occurred roughly 6000-7000 BP. The Middle-Late Holocene transition, marked by diversification of subsistence and technological practices, occurred roughly 3000-3500 BP (Raab and Yatsko 2009:22).

Though Alta California was colonized late during the reach of the Spanish empire, colonial impacts on indigenous Californians began soon after Columbus' initial voyage (Raab 2009c:198). European presence in the Channel Islands started in AD 1542 with Juan Rodriguez Cabrillo's expedition (Hale 1995:6). During the Protohistoric Period (AD 1542-1769), European ships regularly passed through the Channel Islands region, and the Spanish colonized the neighboring American Southwest and Baja California in the seventeenth century. The Protohistoric Period, which included interactions between European explorers and indigenous people, lasted until the founding of the mission system in Alta California in 1769 (Johnson 1988:1-3; Lightfoot and Simmons 1998; Raab 2009c:198). Some Europeans wrote about these protohistoric interactions. Sebastián Vizcaíno wrote an account of his 1602 visit to San Clemente Island (Lightfoot and Simmons 1998; Raab 2009b:62). A supply ship for the Portolá expedition in 1769 brought Fray Juan Vizcaíno to San Clemente Island, likely near Big Dog Cave (Woodward 1959:v-xviii). Vizcaíno (1959:13-18) reported that San Clemente Islanders sailed in red plank canoes with inlaid shell and traded fish and fresh water to the Spanish in exchange for cloth. Protohistoric European contact probably introduced epidemic diseases to San Clemente Island (Raab 2009c:210).

The missions closest to San Clemente Island were Mission San Gabriel, Arcángel (founded 1771); Mission San Juan Capistrano (founded 1776); Mission San Fernando Rey de España (founded 1797); and Mission San Luis Rey de Francia (founded 1798). The indigenous people at these missions became known as the Gabrieliño, Juaneño, Fernandeño, and Luiseño, respectively (Hale 1995:7-8; Kimbro and Costello 2009:16-17). Based on mission baptism records, most of the San Clemente Islanders joined Mission San Gabriel (Johnson 1988:8). Most converts from San Clemente Island were baptized after 1818 when they had already lived in Los Angeles for several years (Hale 1995:8). In 1803, Captain Richard Cleveland of the *Lelia Byrd* wrote the last account of indigenous residents on San Clemente Island, noting the destitute misery of a ragged band of people living in a cave (Johnson 1988:5; Raab 2009b:64). The last Islanders left San Clemente Island around 1829 (Johnson 1988:7).

San Clemente Island was probably uninhabited until the arrival of the Fourth Infantry of the California Union Volunteers in 1864. Then Americans started sheep and cattle ranching, and Chinese and Japanese groups fished for abalone. Civilian activities ended when the United States Navy took over the island in 1934. Now the Natural Resources Office (NRO) of the Naval Air Station, North Island, San Diego, manages the island’s cultural resources (Hale 1995:8-9; Yatsko 2000).

Archaeology

Relic collectors and archaeologists have investigated San Clemente Island since the late nineteenth century. Early collectors included Paul Schumacher in the 1870s and Jean Leon de Cessac. Schumacher targeted burials to collect artifacts for the Smithsonian Institution and Harvard Peabody Museum. Ralph Glidden looted many archaeological sites around the turn of the twentieth century. Theo and Lettie Murphy also collected many artifacts from major sites while Theo was a civilian guard for the U.S. Navy from 1934 to 1944 (Raab 2009b:41-44; Yatsko 2000). From 1939 to 1941, Arthur Woodward conducted 12 expeditions on the Channel Islands for the Los Angeles County Museum of Natural History. Woodward excavated Big Dog Cave (CA-SCLI-119) on San Clemente Island and recovered human and animal burials that had been well-preserved due to the salt spray of nearby waves (Raab 2009b:45-46; Woodward 1941; Woodward 1959:xvii-xxviii).

When the U.S. Navy took over the island, it largely protected archaeological sites by limiting civilian access and preventing the extensive development that destroyed many sites on the mainland (Raab 2009b:45; Yatsko 2000). Furthermore, San Clemente Island lacks burrowing animals, such as gophers and ground squirrels, that have severely disturbed many mainland archaeological sites (Raab and Yatsko 2009:11-12).

Scientific archaeological investigations began on San Clemente Island in the 1950s when Clement Meighan of UCLA led surveys and excavations (Raab 2009b:47-48; Yatsko 2000). Marshall McKusick and Claude Warren surveyed part of San Clemente Island and excavated Eel Point (CA-SCLI-43). Spencer Rogers of San Diego State College excavated CA-SCLI-120 and other northern sites in the 1950s. The Survey

Association of Southern California excavated the Ledge site (CA-SCLI-126) on the Plateau in 1963. Ledge included features similar to those at Big Dog Cave, and Redfelt recovered artifacts dating to the Mission Period (Raab 2009b:48-49).

With new laws governing cultural resources, conservation became the archaeological focus on San Clemente Island in the 1970s and early 1980s. The growing importance of managing cultural resources highlighted the gaps in knowledge about San Clemente Island's archaeological resources. Thus partnerships between resource managers and archaeologists developed with the goal of surveying the island to catalog its archaeological sites. Michael Axford and his students from San Diego Mesa College conducted the first systematic surveys of the island from 1975 to 1980, recording 1634 sites (Meighan 2000; Raab 2009b:50-51; Yatsko 2000). Axford also collected the first samples that were radiocarbon dated. These radiocarbon dates covered almost 10,000 rcybp, showing the long period of human occupation. Clement Meighan of UCLA returned to San Clemente Island in the 1980s to excavate Eel Point (CA-SCLI-43) (Meighan 2000; Raab 2009b:52).

In 1983, the Navy hired Andrew Yatsko as a permanent staff archaeologist to direct the Cultural Resources Management Program (CRMP). The CRMP facilitated the creation of Cooperative Research Agreements (CRAs) with entities outside of the Navy to support basic archaeological research projects that promote cultural resource management objectives. The first CRA with UCLA in 1983 laid the foundation for the archaeological field schools that Clement Meighan directed from 1983 to 1987. UCLA personnel excavated the Nursery site (CA-SCLI-1215), Ledge site (CA-SCLI-126), Big Dog Cave (CA-SCLI-119), Old Airfield site (CA-SCLI-1487), and Columbus site (CA-

SCLI-1492) (Meighan 2000; Raab 2009b:53-55; Yatsko 2000). Another CRA with the Northridge Center for Public Archaeology at California State University, Northridge, authorized surveys and eight archaeological field schools from 1988 to 2003 (Raab 2009b:56-57; Yatsko 2000). The Lemon Tank site (CA-SCLI-1524) on the Plateau was excavated under this CRA in 1988 and 1989 (Raab 2009b:57).

Overview of Geography and Archaeological Sites

Modern archaeological research on San Clemente Island divides the island into six terrain categories: Coastal Terrace, Upland Marine Terraces, Plateau, Eastern Escarpment, Major Canyons, and Sand Dunes. The Coastal Terrace comprises the youngest marine terraces closest to the ocean. Archaeological sites, mainly shell middens, are clustered along the Coastal Terrace and show the importance of marine resources for prehistoric islanders. The step-like Upland Marine Terraces start at the inland edge of the Coastal Terrace and continue toward the Plateau. They contain a high density of archaeological sites. The Plateau along the center of the island comprises upland terraces that have eroded to form a continuous, rolling plain. The Plateau includes a range of archaeological sites that vary in size and length of occupation. There are relatively few archaeological sites in the steep slopes of the Eastern Escarpment, mainly non-occupational sites such as quarries. The Major Canyons are fifteen canyons that cut across other terrain types along the southwestern slope. The canyon floors contain the most reliable fresh water sources on the island. The Sand Dunes cover parts of the Coastal Terrace and Marine Terraces and contain little vegetation (Yatsko and Raab 2009:26-32).

San Clemente Island Ritual Sites

Ritual pit features on San Clemente Island have been found at Big Dog Cave (CA-SCLI-119), Ledge (CA-SCLI -126), Old Airfield (CA-SCLI -1487), Lemon Tank (CA-SCLI -1524), and site CA-SCLI-1437 (Hale 1995:11; Wahoff and York 1999:641). The locations of ritual sites on the Plateau are shown in Figure 2. All of these sites contain a few human burials and middens with ash. Based on radiocarbon dates, the activity at these sites dates to the late Prehistoric and Early Historic Periods (Hale 1995:11; Meighan 2000). The Lemon Tank, Ledge, and Old Airfield sites are located on the Plateau and date to 1500-300 rcybp (Intermediate and Late Periods) (Hale 1995:6). None of the three Plateau sites (Ledge, Old Airfield, and Lemon Tank) have evidence of habitation (Hale and Salls 2000). Unlike Ledge and Old Airfield, Lemon Tank had not been disturbed by bulldozers or pothunters (Hale 1995:12).

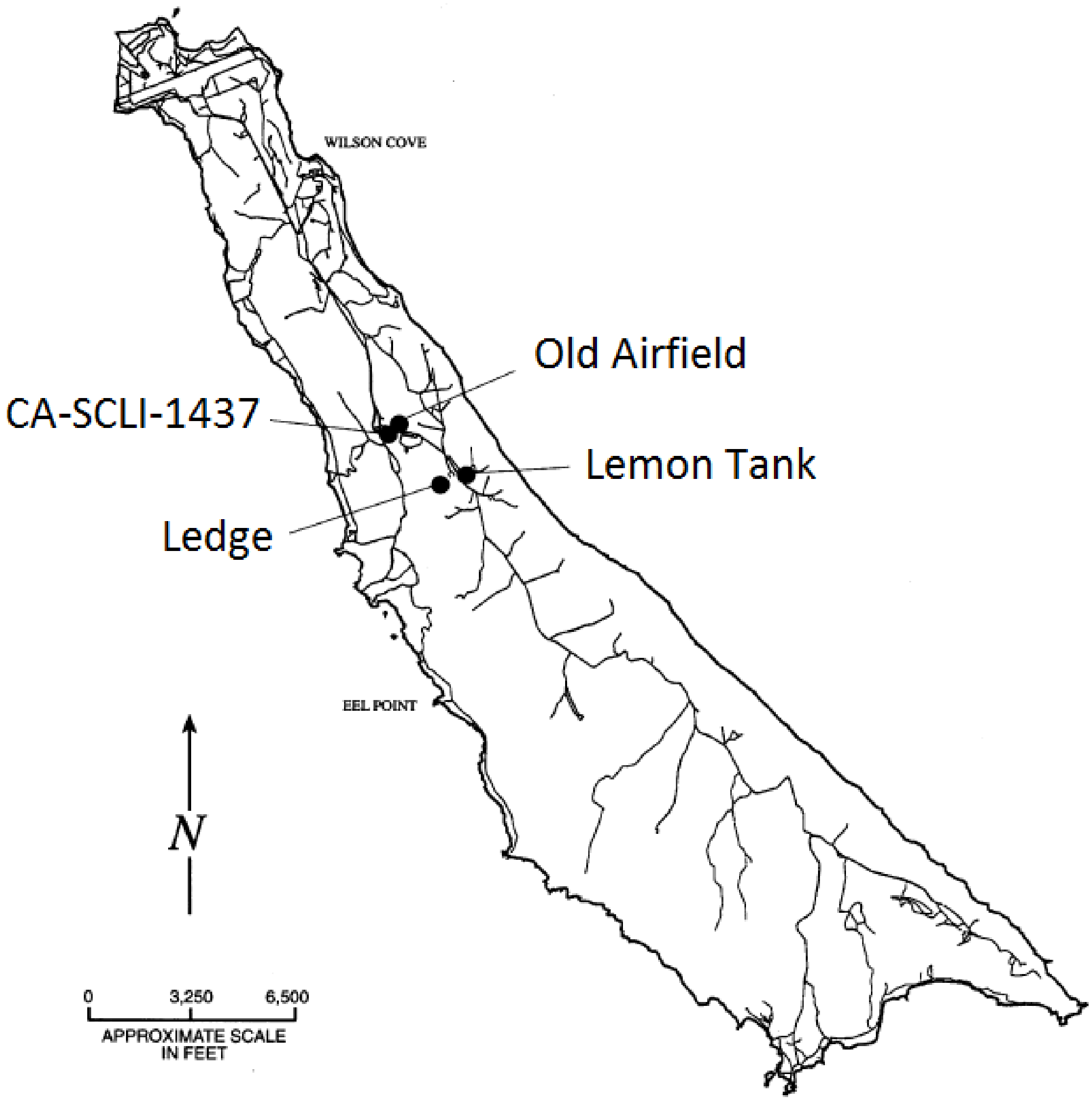


Figure 2: Archaeological Sites on Central Plateau of San Clemente Island (after Wahoff and York 1999:641)

Lemon Tank and the nearby Ledge and Old Airfield sites have excellent views of the channel and mainland. These three sites, which have similar features, suggest repeated ceremonial use and the likely sacredness of the Plateau (Hale 1995:29). Mission Period artifacts have been found at all three sites and at Big Dog Cave (Hale 1995:6). During excavations at Big Dog Cave, Woodward (1941) recovered mission cloth and two ritually buried chickens, which securely date the site to the Mission Period. The excavations at Lemon Tank in 1988-1989 uncovered European artifacts such as glass beads, ceramics, and metal (Raab 2009c:203-204).

The excavated features correspond well to Boscana's description of Chinigchinich rituals, including the raptor burials and *tukmul* basket-tray used in initiation rituals (Ehringer 2003:43-44; Hale and Salls 2000; Raab 2009c:204). The chicken burials at Big Dog Cave may indicate rituals similar to the raptor sacrifices at Lemon Tank. The canid burials at Lemon Tank occurred during rituals that Boscana did not describe. Colonial material culture and foods such as mission cloth and wheat seeds at Big Dog Cave may have been substituted for typical pre-colonial offerings such as basketry and native seeds at Lemon Tank. Thus Raab (2009c:209-210) hypothesizes that Lemon Tank may show the protohistoric development of the Chinigchinich religion while Big Dog Cave may represent Mission Period Chinigchinich rituals. Testing this hypothesis requires dating the individual ritual features.

Old Airfield (CA-SCLI-1487)

The Old Airfield site includes 33 cache pits. "These cache pits contained steatite plaques, 'killed' bowls of many designs and materials, red-stone pipes, a possible metal cup, basketry, and abalone (*Haliotis cracherodii*) shells inverted upon one another and containing beads, seeds, and other items" (Hale and Salls 2000). Although the site had been bulldozed, the presence of raptor and canine elements suggests that these animals had been ritually buried similar to the burials at the Ledge site. The human burial at the Old Airfield site included a metal cup and thus dates to the Historic Period (Hale and Salls 2000).

Ledge (CA-SCLI-126)

The Ledge site (SCLI-126) was excavated by the Archaeological Survey Association in the 1960s and by UCLA in the 1980s. "The site had numerous small cache pits containing seeds, shell ornaments, fish-hooks, steatite plaques, bowls, basketry, and cordage. Many of these items had been ritually broken or burned ('killed') before they were buried" (Hale and Salls 2000). The Ledge site contains animal burials, including a red-tailed hawk burial (Hale and Salls 2000), and caches of "abalone shells and seeds, beads, bones, broken artifacts and other cultural material suggesting the site's important location for periodic mourning ceremonies" (Hardy 2000). Post holes indicate that a circular structure once occupied the site (Hardy 2000). Of all of the ritual sites excavated on the Plateau, the Ledge site contains the most historic artifacts, which securely date 41 pit features to the Historic Period (Wahoff and York 1999:641). One of the pit features contained a Catholic medal (Perry 2013:147).

CA-SCLI-1437

The CA-SCLI-1437 site is located on the Plateau near the Old Airfield site. Test excavations were conducted at CA-SCLI-1437 in 1997, revealing four separate middens. A 6 cm layer that appeared similar to a house floor capped an offertory pit. The pit contained hundreds of shell beads, eight projectile points, rusted metal, and a piece of colorless glass. Most of the shell beads were *Olivella* needle-drilled Class H1a or H1b, which date to the Mission Period. About 10% of the beads were Class H2 or H3, which date to the late and post-Mission Periods (Wahoff and York 1999:641-643). Since there are no terrestrial game animals on San Clemente Island, Wahoff and York (1999:643) argue that the unusually shaped projectile points were made for ritual purposes, not hunting.

The glass has asphaltum residue with possible bead impressions. Wahoff and York (1999:643-644) identified the glass as part of a French square bottle, which were first manufactured in the 1860s. Since the pit was undisturbed, the glass was likely deposited when the pit was ritually filled. The asphaltum on the glass is similar to asphaltum on other artifacts from the pit. Therefore the glass likely indicates that indigenous people conducted an offertory ceremony long after indigenous residents had abandoned the island. Yatsko (personal communication to author, December 2, 2015) cautions that the bottle identification should be cross-checked to verify this dating. Wahoff and York (1999:644) hypothesize that Gabrieliño seasonal ranch employees from the mainland knew about the ritual significance of the Plateau and conducted ceremonies while working at the ranch.

Lemon Tank (CA-SCLI-1524)

L. Mark Raab and Andrew Yatsko conducted field school excavations at Lemon Tank for three weeks each in the summers of 1988 and 1989 (Hale 1995:13). Lemon Tank was excavated because it had been undisturbed and therefore could serve as a good comparison case for the Ledge and Old Airfield sites. A map of the site is shown in Figure 3. The excavations focused on the area where the ceremonial structure was believed to be located based on ethnographic accounts. The series of post holes align with descriptions of ceremonial structures and are similar to those at Old Airfield (Hale and Salls 2000). The berm surrounding Lemon Tank is approximately 30 m long, which would allow a large proportion of the community to witness public rituals (Hale 1995:30). Raab and Yatsko's excavations in 1988-1989 uncovered 136 features (Hale 1995). "Some of these were cache pits containing seeds, human adornments (beads and pendants), shell fishhooks, harpoon barbs, effigies, steatite plaques, bowls, asphaltum coated water bottles, baskets, and various types of cordage. Many of the items had been 'killed' before being interred" (Hale and Salls 2000). Metal artifacts and glass trade beads indicate that the site was occupied during the Historic Period (Hale and Salls 2000). Since over a third of the features suggest ritual intent compared to only one eighth of the features indicating food preparation and consumption, Hale (1995:30) argues that Lemon Tank was a sacred site.

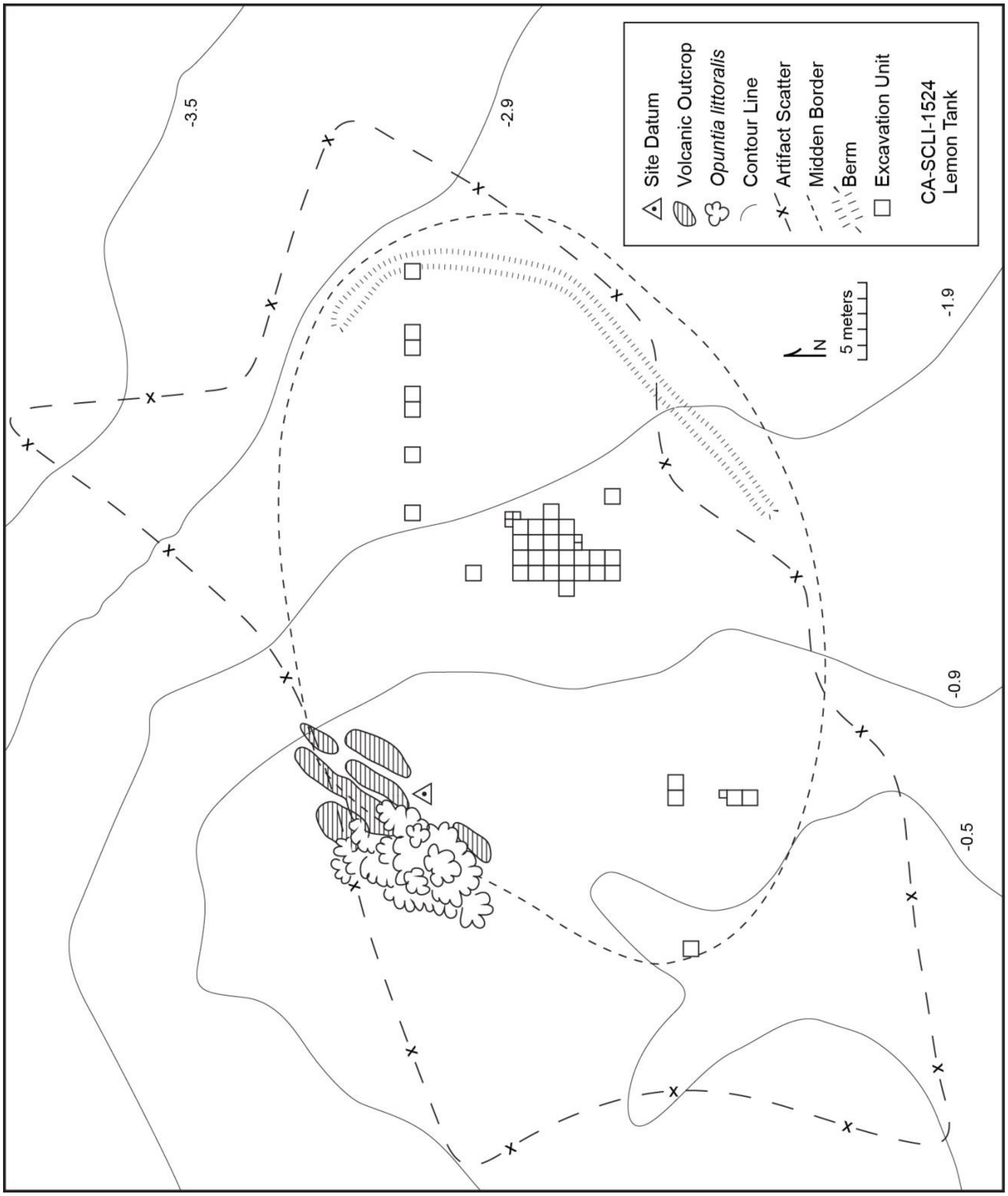


Figure 3: Lemon Tank (SCLI-1524) Site Map (after Hale 1995:138)

The central structure area, defined by post holes, contains the most definitively ideological features, including animal burials. The midden suggests communal feasting. The wealth of objects destroyed, including over 5000 beads, indicates offerings. Lemon Tank was therefore probably a public ritual site. At the same time, the small central structure and animal symbolism suggest that specialists managed the rituals (Hale 1995:30-32). The thick midden surrounding the central structure and the relative cleanliness of the cache pit area suggests that mourning rituals occurred many times at the site and produced a lot of waste that people swept from the central ritual location (Hale and Salls 2000). The shallow depth of the site and the frequent sweeping and pit-digging of past San Clemente Islanders obscure stratigraphic relationships across the site (Hale 1995:13).

As shown in Table 2, radiocarbon dates from Lemon Tank range from AD 925-1541, which mainly coincides with the Late Period (AD 1000 to European contact) and spans the late Prehistoric and Protohistoric Periods (Hale 1995:1).

Table 2: Lemon Tank (CA-SCLI-1524) Radiocarbon Dates

Lab Number	**Provenience**	**Material**	**^{14}C Age (uncorrected)**	**Calibrated YBP**	**Calibrated Years AD (dendrocalibrated, 1-s range)**
Beta-39151	Feature 10, 09S/15E, 30-40 cm	charcoal	370±50	463	1452-1522
Beta-39152	00N/15E, 40-50 cm	charcoal	1140±90	1058-1014 (1025)	803-986
Beta-39153	Feature 28, 9S/16E, 30-40 cm	seeds	300±60	418-313 (409)	1511-1601

(Hale 1995:12; Raab 2009c:204)

In order to assess the importance of ritual activities at Lemon Tank, Hale classifies the Lemon Tank features as structural, behavioral, or ideological:

> Features contributing to the physical shape of the site, such as the surrounding berm and post holes are discussed as “structural” features. Pit features containing tools or materials necessary to, or by-products of, activities thought to have occurred at the site—such as fire hearths, grinding tools, pigment caches and food remains—are classified as “behavioral” features. Features of no apparent utility, high labor investment to little apparent utility, iconographic form or structure, and assemblages of objects given special treatment are classified as “ideological” features. [Hale 1995:14]

Structural and behavioral features may also have ideological functions. For example, some of the structural features are probably post holes for the central ceremonial structure.

Hale (1995:26-28) applies Renfrew’s criteria to identify ritual sites: such sites draw participants’ attention, express the boundary between the natural and supernatural worlds, indicate a deity/deities’ presence, and include participation and offering. However, Renfrew’s criteria contain biases that do not include all rituals. Therefore Hale (1995:28-29) also applies Binford’s definition of ideotechnic artifacts in her analysis of the Lemon Tank features. Such artifacts do not have clear utilitarian functions or require significant labor investment compared to their utilitarian functions. Iconography and depositional context may also indicate ideotechnic artifacts.

Table 4 in Appendix A outlines the classification of all of the Lemon Tank features. Hale’s (1995) ideological designation is further subdivided (e.g., seed caches, avian burials, etc.). Some features correspond to multiple categories. Due to discrepancies in feature classification, the features were reclassified using the feature descriptions in Appendix 2 of Hale's (1995) thesis. Analysis of these features is based on the updated classification.

Structural features (detailed in Table 5) include the surrounding berm and post holes (Hale 1995:14). The post holes suggest a 4 m long (north to south) and 3 m wide (east to west) structure that was rebuilt several times. The behavioral features are detailed in Table 6. Some behavioral features contain burned personal property, pigment, fire-affected rocks, and/or food remains (Hale 1995:14-15).

Based on the 60 ideological/ritual features, Hale (1995:1) argues that ceremonial activities were the primary focus at Lemon Tank. These features include one ceremonially buried turtle shell rattle (Table 7), four stone bowl features (Table 8), four human burials and grave goods features (Table 9), eight avian burials (Table 10), 11 canid burials (Table 11), five ceremonial basket-tray features (Table 12), 25 seed caches (Table 13), and six non-seed cache deposits (Table 14) (Hale 1995). Some ideological features belong to multiple subcategories. The tables detailing these features include Hale's interpretation of the features based on descriptions of rituals in ethnohistoric documents. Because Features 10 and 67 contained fragments of the same stone bowl, they are deemed one continuous feature in this analysis.

The post holes at Lemon Tank strongly suggest a ceremonial structure (Hale 1995:44). Hale (1995:58) connects the bowls recovered in Features 41 and 139 to the toloache initiation ceremony. Hale (1995:63) suggests that Feature 53 at Lemon Tank may have been a roasting pit used in the girls' initiation ceremony. The cooking fire features at Lemon Tank align with the accounts of feasting during the mourning ritual. Pigment in several Lemon Tank features may have been used to make images in mourning ceremonies or as body paint for initiation rites. 29 features at Lemon Tank contain burned personal property as described in *Toltcinic* rituals (Hale 1995:50-51). The broken turtle shell rattle in Feature 32 of Lemon Tank is consistent with ethnographic descriptions of *maxhahish* (ritual warfare resolution) ceremonies (Hale 1995:66). Tac (2011:196-197) describes a dance in which a singer shakes a turtle shell rattle. He does not mention anything related to a conflict resolution, which suggests that turtle shell rattles were used in different dances and ceremonies. Therefore the turtle shell rattle could have been buried in a different ritual.

San Clemente Island: Human and Animal Burials

Although there is not definitive evidence that the occupants of the different sites on San Clemente Island were biologically or culturally related (especially for sites that date to different time periods), Hardy (2000) argues that the similarity in style of their mortuary practices indicates similar religious beliefs and practices. Big Dog Cave contained burials (one adult male, two adult females, one dog, one rooster, and one hen) dating to the Historic Period (Hardy 2000; Woodward 1941). Mission cloth enveloped the adult female burials. The adult male, dog, and rooster burials were covered with sea otter fur (Hardy 2000; Woodward 1959:xviii). The Eel Point C midden burials of adult humans often included offerings of sea animal bones. Eel Point C also included fox and dog burials and offertory caches (Hardy 2000). The Old Airfield and Lemon Tank sites each contained the remains of a human female buried face-down in a “frog” position facing east. Southern California ethnographic accounts indicate that people burned instead of buried the deceased's property during the mourning ceremony. Therefore the burial practices at San Clemente Island may draw on an older ritual tradition. Some of the offerings were burned before they were buried (Hale and Salls 2000).

Lemon Tank Avian Burials

All of the Lemon Tank avian burials contained juvenile individuals (Hale 1995:21). Five were red-tailed hawks (*Buteo jamaicensis*), two were peregrine falcons (*Falco peregrinus*), and one was a raven (*Corvus corvax*). One of the red-tailed hawks was buried with over 400 shell beads (Feature 23); otherwise the avian burials contained relatively few associated artifacts (Hale 1995:104-105, 108-109, 114, 116-118, 121-122).

Lemon Tank Canid Burials

Of the eleven canid burials at Lemon Tank, five were domestic dogs (*Canis familiaris*) and six were island foxes (*Urocyon littoralis*) (Hale 1995:23-25). Hale and Salls (2000) caution that *techichi* dogs closely resemble island foxes, making identification difficult. Hale (1995:69) suggests that the juvenile canid burials near likely mourning fires parallel the rituals with juvenile raptors. In contrast to the canid burials outside the central structure area, the canid burials within the central structure area contained artifacts. In particular, the adult dog in Feature 27 was buried in the center of the central structure area and was surrounded by 18 seed caches. Two ceremonial basket-trays were buried above the dog and may indicate an initiation ritual. A bifacial chert blade was found in the dog's abdominal cavity, and a quartz crystal (a powerful object in indigenous Californian cosmology) was found on the dog's left shoulder. The grave goods for this dog resemble the grave goods in human burials excavated at the Nursery Site (SCLI-1215) (Hale 1995:22, 70; Hale and Salls 2000).

Lemon Tank Caches and Basket-tray Features

At least three of the seed deposits included human deciduous teeth, which Hale (1995:68) connects to children's initiation rituals. The *Unish Matakish* ritual was likely limited to the Chinigchinich religion and involved the ritual burial of a deceased toloache initiate's personal ceremonial possessions, including their *tukmul* (sacred winnowing basket-tray). Feature 120 at Lemon Tank included a basket-tray with likely ceremonial objects made of shell, stone, and bone that is consistent with Strong's (1929:318) description of the *tukmul* (Hale 1995:54-55).

CHAPTER 6: DATA AND ANALYSIS

In order to assess the different hypotheses regarding the origin of the Chinigchinich religion, individual ritual features must be dated to determine when Chinigchinich ritual practices occurred. Shell beads can be used to establish *terminus post quem* for ritual features. Furthermore, comparison of the relative consumption of shell beads and glass beads in ritual features may illuminate Tongva choices in the practice of religious identity.

Shell Beads

Indigenous people in southern California made shell beads and used them as currency (Boscana 1978:24, 69; Gamble 2008:276; Reid 1968:43). Beads made from Pacific Coast mollusks have been found in inland sites such as the Great Basin starting in the Early Holocene, indicating deep, long-term social networks (Bennyhoff and Hughes 1987; Raab and Howard 2009:123-124). In response to the 1811 *interrogatorio* from the Spanish viceregal government of Mexico, the Alta Californian missionaries at Missions Santa Inés, San Luis Obispo, San Diego, San Luis Rey, and San Fernando all noted that indigenous people made offerings of beads in their rituals (Kroeber 1908). Preferred bead styles changed over time, and these stylistic changes have been used to develop an *Olivella* shell bead typology to facilitate dating of archaeological sites (Bennyhoff and Hughes 1987; Milliken and Schwitalla 2012:6).

Olivella Shell Bead Typologies

Bennyhoff and Hughes' (1987) typology replaces the shell bead synthesis that Bennyhoff and Heizer had completed in 1958. The Bennyhoff and Hughes (1987) *Olivella* shell bead typology has overlapping bead descriptions, which can make bead classification difficult. Therefore Milliken and Schwitalla (2012:1-3) have updated and expanded the Bennyhoff and Hughes (1987) typology. Milliken and Schwitalla (2012:3) consulted with multiple shell bead experts (David Fredrickson, Chester King, Robert Gibson, and John Johnson) to establish the metrical attributes of each of these classes. Whereas Bennyhoff and Hughes (1987) use Dating Scheme B, Milliken and Schwitalla (2012:7-8) use Dating Scheme D, which was developed through accelerator mass spectrometry (AMS) dating of 103 representative beads. Milliken and Schwitalla note that radiocarbon dating of marine shell has some uncertainty due to the reservoir effect.

By including metrical data on bead types, Bennyhoff and Hughes (1987) intend to standardize reporting on shell beads. They argue that bead typologies should reflect historical patterns of behavior, not simply differences in form. Therefore the authors focus on which attributes can be used to temporally distinguish bead types. Furthermore, bead types are based on grave lots, with the assumption that beads that were strung together should be consolidated into the same class. Bennyhoff and Hughes (1987) caution that bead form is not enough to classify beads; context is critical in order to appropriately distinguish bead classes that have similar form. Though Milliken and Schwitalla (2012:6) have refined Bennyhoff and Hughes' (1987) *Olivella* shell bead typology, the current typology is still a work in progress that should be improved with bead measurements from more sites.

In the typology, bead classes are designated by capital letters, and types within classes are designated by Arabic numerals. Types may indicate temporal or morphological variation. Subtypes are designated by lowercase letters, and variants are designated using additional Arabic numerals. An “i” at the end of a bead classification designates incising (Bennyhoff and Hughes 1987).

Analysis of Shell Beads in Lemon Tank (CA-SCLI-1524)

Measurements and Documentation

The perforation diameters of beads associated with features at Lemon Tank were measured in accordance with Milliken and Schwitalla’s (2012:10-11) recommendations and photographed. The perforation shape, edge finish, visual type, and notes on attributes such as presence of asphaltum and burning were recorded for each bead. Due to the author’s uncertainty regarding visual types, particularly those that cross metric ranges of different bead classes, the recorded visual types should be considered a preliminary assessment that should be verified by more experienced shell bead analysts. In the interest of facilitating future research, this thesis includes perforation measurements and photos of all of the analyzed beads in Appendices A and B, respectively. Photos were taken of the ventral and dorsal sides of all measured beads. In some cases of thick beads, the edges were also photographed. Unmeasured beads from features were photographed to show the representativeness of the measured beads. For acquisition number lots with up to 20 beads, all of the beads in the lot were measured. For lots with more than 20 beads, either 20 beads or 20% of the total number of beads in the lot (whichever was greater) were measured. In a few cases with high bead type variability within a lot, all of the beads in a lot with more than 20 beads were measured.

Perforation diameters were measured using an Edmund 6X Pocket Comparator with Hastings Triplet System and Multi Scale Measuring reticle (S/N 7-7257-021). The reticle specifications are included in Appendix C. Due to the curvature of beads, the perforation diameter could sometimes be difficult to measure, especially if the reticle could not be set perpendicular to the face of the bead. The measurement uncertainty in perforation diameter measurements is therefore estimated to be 0.1 mm. The perforation diameter was measured from both faces of the bead (except for Class A spire-lopped beads), and the minimum measurement was recorded in accordance with Milliken and Schwitalla's (2012:11) recommendations.

Distinguishing uni-conical (dorsal cone or ventral cone) from bi-conical perforations can be difficult since some apparently bi-conical beads may have been drilled uni-conically and then worn down while strung. Based on shell bead replication experiments, Brian Barbier (personal communication to author, March 11, 2016) also notes that dorsal retouch can make ventral cone perforations appear to be bi-conically drilled. In general, this research classifies beads as uni-conical only if there is a sharp edge around the perforation on one face of the bead. According to Chester King (email to author, April 23, 2016) early needle-drilled beads generally have perforation diameters of 0.9-1.1 mm. The perforations of later historic beads are less regular in size and shape partly because other metal tools besides needles were used as drills. Because of the nature of the research questions in this study, the cylindrical perforation classification is conservatively reserved for perforations with clear, sharp angles that are ≤1.2 mm in diameter. In some cases, the author consulted with Chester King regarding bead classification.

Results

Of the over 5000 shell beads excavated from Lemon Tank, 2531 were associated with features. The Site Records for these beads are listed in Table 15 (excavation year 1988) and Table 16 (excavation year 1989). Of these beads, a total of 913 beads from 40 features were analyzed. (Feature 25 contained only one, broken shell bead, which was not measured and therefore not included in this total.) Beads associated with human burials were excluded from this analysis. The analysis results are detailed in Table 17 (excavation year 1988) and Table 18 (excavation year 1989). Of the 40 features that contained shell beads, at least 16 and as many as 17 contained needle-drilled beads. Most of the needle-drilled beads were visual types H1 or H2, which indicate a temporal span of ca. AD 1770-1834 (Early, Late, and Terminal Mission Phases of the Historic Period) (Milliken and Schwitalla 2012:56-58). Some features fall under multiple categories and are therefore counted for each category they represent. The ideological features were analyzed by sub-type. The results are summarized in Table 3 below.

Table 3: Lemon Tank (SCLI-1524) Summary of Shell Bead Analysis Results

Feature Type	Total Number of Features	Features with Shell Beads	Features with Needle-drilled Shell Beads	Notes
Structural	24	2	1	
Behavioral	60	24	10-11	Feature 90 may contain a needle-drilled bead in AC# 1524-1419
Ideological: Ceremonially Buried Turtle Shell Rattle	1	1	0	
Ideological: Stone Bowls	4	3	1	Features 10 and 67 are considered 1 continuous feature in this analysis.
Ideological: Avian Burials	8	3	1	
Ideological: Canid Burials	11	3	2	
Ideological: Ceremonial Basket-Trays	5	1	1	
Ideological: Seed Caches	25	10	6	
Ideological: Non-Seed Cache Deposits	6	3	1	

As shown in Table 2 in Chapter 5, radiocarbon dates for Features 10 and 28 place them in the Prehistoric and Protohistoric Periods, respectively. Feature 10 contained shell beads, but none of them were needle-drilled, which is consistent with the radiocarbon date. Feature 28 did not contain any shell beads.

Analysis

The results were analyzed to determine any patterns in bead classes across the different types of features (e.g., canid burials, avian burials, basket-tray features, etc.). In particular, this analysis focused on which features contained beads with cylindrical perforations. These Class H *Olivella* beads and non-*Olivella* beads with cylindrical perforations were drilled with Spanish-introduced iron needles and therefore securely date to the Historic Period. These beads were used to establish *terminus post quem* of individual features. To be sure, features without needle-drilled beads may have been created during the Historic Period. Some stone-drilled beads were likely made during or curated into the Historic Period, and some features could have been created during the Historic Period without depositing any needle-drilled beads. Therefore this method cannot securely date any features to the Prehistoric Period. Furthermore, this analysis cannot distinguish prehistoric from protohistoric ritual activity. Such an assessment requires different dating methods, such as radiocarbon. Therefore this study cannot eliminate the possibility that Tongva ritual practice changed in response to interactions with European mariners during the Protohistoric Period. Instead this analysis should be considered a first step towards developing temporal resolution of ritual features and associated ritual practices.

If all of the features of a particular type securely date to the Historic Period, there is a reasonable likelihood that the ritual associated with this type of feature was introduced at Lemon Tank during the Historic Period. It is therefore possible that the associated ritual developed during the Historic Period and could have been influenced by colonialism. Such a pattern would support hypotheses that aspects of Chinigchinich ritual practice were syncretic with Christianity and/or were innovations that developed as part of a revitalization movement in response to colonization.

Except for the one ceremonial basket-tray feature that contained needle-drilled beads, all of the types of features that contained needle-drilled beads also included features that only contained stone-drilled beads. The sample size for the ceremonial basket-tray feature is too small to draw a conclusion, especially considering that there are five other ceremonial basket-tray features that did not contain any shell beads and therefore cannot be dated using this method. The data from Lemon Tank do not suggest the *de novo* emergence of unique ritual practices among the Tongva on San Clemente Island during the Mission Period. Consequently these results cannot eliminate the hypothesis that Chinigchinich ritual practices developed from existing indigenous ritual practices without Christian influence.

Comparison of Shell Beads and Glass Beads

While the Lemon Tank collection contains over 5000 shell beads, it is striking for its comparative lack of glass beads. Only 14 glass beads were recovered from Lemon Tank. Only one of those glass beads was found in a feature. Feature 121, a seed cache that contained ash and burned personal property, contained one glass bead and six shell beads, one of which was needle-drilled. Given the small size of some of the shell beads and faunal remains recovered from Lemon Tank, this difference is probably not due to excavation sampling bias. There are several possible explanations for the relative dearth of glass beads and abundance of shell beads at Lemon Tank. First, Lemon Tank may have been predominantly used before European Contact. Considering that over a third of the features that had shell beads date to the Mission Period or later, Lemon Tank was clearly being used during the Mission Period, a time when the Spanish traded many glass beads to indigenous people in Alta California. Consequently this first hypothesis is not supported.

Second, the San Clemente Islanders may have had little access to glass beads. San Clemente Island was far from the mainland colonial establishments, including the missions. Since indigenous Alta Californians could not make glass beads themselves, they had to obtain them through direct or indirect trade with Europeans. This hypothesis is therefore plausible. At the same time, Vizcaíno (1959:25) observed that some of the indigenous people in the Santa Barbara Channel region already had glass beads in 1769. Therefore some people in the Santa Barbara Channel region had access to glass beads before the first mission was founded in Alta California. During the Mission Period, the Spanish traded large quantities of glass beads to indigenous Californians. Indeed, the Presidio Santa Bárbara paid for Chumash labor with glass beads, particularly the highly prized thick, red beads (Duggan 2004:26-27). Furthermore, the presence of needle-drilled beads on San Clemente Island indicates either direct or indirect access to Spanish iron needles. Needle-drilled beads could have been made by San Clemente Islanders or received in trade from other indigenous groups who had access to iron needles (and probably glass beads as well).

A third hypothesis is that San Clemente Islanders intentionally avoided incorporating glass beads in their activities at Lemon Tank. This possibility has precedence among the Tongva. Reddy (2015) found evidence supporting intentional avoidance of Spanish plant foods at Tongva sites in the Los Angeles Basin during the Mission Period. She compared Tongva plant use in domestic, mortuary, and public mourning ceremony contexts using macrobotanical remains from CA-LAN-62/H and CA-LAN-211/H. In spite of the upheaval of colonialism, Tongva people in an indigenous community in the Los Angeles Basin continued using native plants well into the Mission Period. The Tongva in the study area selectively used small amounts of non-native domesticated plants in rituals. Compared to the domestic feasting and mortuary context features, the public mourning features contained a significantly smaller proportion of non-native plant remains. Considering that mourning anniversary ceremonies drew people from many communities, some of whom would have likely had access to Spanish plant foods, the relative dearth of Spanish plant foods at mourning features compared to feasting and mortuary features suggests that the Tongva in the study area intentionally excluded foreign foods in their public ritual practices. In the case of Lemon Tank, this pattern may indicate that San Clemente Islanders intentionally excluded obviously foreign material culture (e.g., glass beads) from their public ritual practices. It is possible that needle-drilled shell beads were still considered indigenous material culture even though they were made with Spanish technology.

CHAPTER 7: CONCLUSIONS AND FUTURE RESEARCH POTENTIAL

Distinguishing the Chinigchinich religion from other religious systems (including the toloache religious system) is difficult (Hale 1995:61). This difficulty supports the hypothesis that the Chinigchinich religion developed from pre-colonial indigenous religious traditions. The scholars who hypothesize that the Chinigchinich religion was syncretic with Christianity or was a revitalization movement in the face of colonialism base their assessments on the ethnohistoric descriptions of the deity Chinigchinich. While this thesis research does not indicate a stark change in ritual practice at Lemon Tank during the Mission Period, it is possible that beliefs regarding the meaning of Chinigchinich ritual practices changed during the Mission Period.

If Tongva people were actively avoiding incorporating colonial material culture (such as glass beads) in their ritual practices, the Chinigchinich religion could have been part of a nativistic revitalization movement in which people tried to expunge colonial influence. Shared material culture reinforces shared identity (Liebmann 2012:158). If the Chinigchinich religious movement was indeed a nativistic response to colonization, its shared ritual practices and associated material culture may have facilitated shifting ethnic identities in the wake of colonial upheaval, providing a means to assert continuity with pre-colonial indigenous religion. Selective consumption of indigenous and colonial material culture, such as shell versus glass beads, reflects agency in the development of religious identity (Friedman 1990:312-313). In the Prehistoric Period, shell beads had particular meanings in ritual practice. After European Contact, shell beads may have acquired additional significance as symbols of indigenous identity because they contrasted with glass beads, which may have symbolized Spanish identity.

Based on Light (2000) and Schmidt (2006), one should normally expect religious change to build on an existing religious system rather than replace it wholesale. Therefore the persistence of toloache rituals in the Chinigchinich religion suggests continuity in Tongva ritual practice. At the same time, the incorporation of ritual practices of the toloache religious system into the Chinigchinich religion does not necessarily mean that there was little religious change. Indeed, continuity in ritual practice may have helped the Chinigchinich religion spread to a receptive audience of indigenous people dissatisfied with the colonial system. If a key innovation of the Chinigchinich religion was the role of the deity Chinigchinich in promoting and enforcing a nativistic world view in opposition to colonialism, then the meaning of existing ritual practices may have changed to adapt and remain relevant to adherents' lives in the context of colonialism.

Hardy (2000) interprets the Historic Period artifacts at the Ledge site on San Clemente Island as evidence of a revivalism movement of indigenous neophytes who fled the missions. However, it is not currently clear how closely the San Clemente Islanders were connected to the missions when they conducted Chinigchinich rituals at Lemon Tank. Though many neophytes ran away from the missions or manipulated the temporary leave system (Lightfoot 2005:64-65; Panich and Schneider 2015), we do not know if many Tongva neophytes fled to San Clemente Island. Given its remoteness from the missions, San Clemente Island may have been an attractive refuge. It is possible that some neophytes received training to perform Chinigchinich rituals on San Clemente Island and then returned to the missions where they taught the Chinigchinich rituals to others. They could have spread the Chinigchinich religion with the proselytization zeal that DuBois (1908b) noted.

Future Research

Further analysis of Lemon Tank and related sites may reveal much about the development of the Chinigchinich religion. Future research on the development of the Chinigchinich religion and colonial religious interactions should expand to include other ritual sites on the Channel Islands and mainland. This research should incorporate data from the missions and sites in indigenous communities and refuges. Aside from the distinction between stone-drilled and needle-drilled shell beads, closer analysis of bead classes may refine dating of features. Future research should incorporate other lines of evidence in addition to shell beads to develop a better understanding of ritual practice across space and time. GIS analysis of superposition of features within a site may aid relative dating of features. On a broader scale, GIS analysis within and across sites may illuminate geographic patterns in ritual practice. By dating ritual features and sites across the islands, mainland, and missions, additional research may be able to retrace the development and spread of the Chinigchinich religion.

Landscape Analysis

Landscape structures social interactions, and the landscape that indigenous people inhabited encompassed far more than the missions (Panich and Schneider 2015). People actively and selectively use social memory and the landscapes in which they embed it to bring meaning to the past, develop strategies for dealing with the present, and influence the future (Schneider 2015). By expanding this thesis research to incorporate sites from a wide geographic region, landscape theory can provide a useful lens for understanding dynamics in the Chinigchinich religion.

For example, Panich and Schneider (2015) examine indigenous agency within the colonial constraints of the Spanish missions in Alta California. Three spatial zones organize their conceptual model: “colonial settlements as native places; native homelands/colonial hinterlands; and interior worlds and interspaces” (Panich and Schneider 2015). Indigenous people exercised agency in the ways they organized and used space inside and outside the missions. Furthermore, indigenous people and their material culture moved between zones—missions were not their inevitable final destination. Across Alta California, indigenous people exercised varying degrees of autonomy in the face of different colonial constraints in different regions (Panich and Schneider 2015). In particular, the hinterlands were empowering places where indigenous people could creatively decide how to address colonialism (Schneider 2015).

Through the dynamic process of social memory, important places in indigenous cultures gained additional significance as “places of refuge” outside of colonial establishments. Places of refuge are places that people seek out in order to escape persecution. These places may be familiar, such as home villages, or previously unknown to refugees. These places are integral in the maintenance and reinvention of social identity (Schneider 2015).

For example, many Chumash fled to inland regions to escape coastal colonial establishments. Hudson and Underhay (1978:72-73) hypothesize that the large number of inland historic sites with rock art may reflect a religious revitalization movement in reaction to colonization and an attempt to counteract the high mortality associated with European diseases during the early Mission Period. Although the Chumash probably started making rock art in prehistoric times, the increased intensity of inland ritual rock art creation during the Mission Period likely indicates an attempt to mitigate the stress of colonialism through ritual practice in refuges far from colonial establishments.

One of these inland refuges was San Emigdio Canyon in the San Joaquin Valley. San Emigdio Canyon included people from different indigenous groups who had varying degrees of experience with the mission system (Bernard 2008:xxv, 1-3). Chumash residents adapted their traditional cultural items to assert their agency and reject colonial culture. Chumash residents in San Emigdio Canyon actively avoided colonial objects (e.g., glass beads and metal tools) even though this avoidance required extra effort. Therefore the social value of asserting indigenous identity likely outweighed the economic cost of favoring traditionally meaningful objects. At the same time, residents reconfigured traditional Chumash objects to adapt to their present needs in San Emigdio Canyon rather than reinstate their pre-Contact culture (Bernard 2008:346-349).

Raab (2009c:210) hypothesizes that San Clemente Island may have been a Chinigchinich religious center because it was remote from the missionaries. If, like the Chumash in San Emigdio Canyon, the Tongva on San Clemente Island were actively avoiding colonial material culture, sites such as Lemon Tank may have been empowering places where the Tongva could have exercised autonomy and possibly strategized their interactions with colonists.

Qualitative Analysis

Qualitative analysis of features may facilitate assessment of meaning in ritual practices. For example, Hull et al. (2013) argue that communal mourning features are a rich source of information about preparation, performance, and material symbolism.

These features require detailed, qualitative analysis of objects and their context to reveal the complexity of their role in social production. Along with typical archaeological documentation of the physical properties of artifacts (size, material, etc.), Hull et al. (2013) take into account artifacts' locational data, the sections of objects that were deposited, breakage and coloration patterns, and refitting patterns as a means to recover the intentions of the people that deposited them. Non-local objects indicate a significant investment of time for their manufacture. The lack of wear on some objects indicates that they were intended specifically for use at these features. In order to study the meaning of these features, Hull et al. (2013) urge other scholars to investigate the kinds of implements deposited, coloration of objects, breakage patterns (many objects appear to have been intentionally broken), and locational data. Hull et al.'s emphasis on detailed, qualitative analysis shows how existing artifact collections (such as Lemon Tank) can be reexamined for new data that were overlooked in earlier studies.

Concluding Thoughts

The strict discipline of the Franciscans' enculturation program in the missions contrasted with the relative autonomy of Tongva people on San Clemente Island. Therefore integrating research on the missions with research on the Channel Islands presents an opportunity to explore the range of agency Tongva people could and did exercise in the context of Spanish colonialism. Rather than focus exclusively on Spanish-Tongva interactions, future research can illuminate diversity within Tongva society and interactions with other indigenous communities. As Lightfoot and Simmons (1998) note, word of mouth among indigenous peoples tended to travel much faster than European ships, and Tongva people likely knew something about the seventeenth-century indigenous experiences in the missions of the American Southwest and Baja California (Raab 2009c:198). If the Chinigchinich religion started as a nativistic revitalization movement in the Protohistoric Period, it may have helped the Tongva organize and prepare for the mission system.

WORKS CITED

Äikäs, Tiina and Anna-Kaisa Salmi
2013 "The Sieidi Is a Better Altar/The Noaidi Drum's a Purer Church Bell": Long-term Changes and Syncretism at Sámi Offering Sites. World Archaeology 45(1):64–82.

Amador, José María, and Lorenzo Asisara
2005 Californio Voices: The Oral memoirs of José María Amador and Lorenzo Asisara. Gregorio Mora-Torres, ed. and trans. Denton, Texas: University of North Texas Press.

Anonymous
1976[1907] Eagle Dance of the Mesa Grande Tribe. *In* Some Last Century Accounts of the Indians of Southern California. Robert F. Heizer, ed. Pp. 49-53. Ramona, California: Ballena Press.

Applegate, Richard B.
1975 The Datura Cult Among the Chumash. The Journal of California Anthropology 2(1):7-17.

Asad, Talal
1983 Anthropological Conceptions of Religion: Reflections on Geertz. Man, New Series 18(2):237-259.

Aviles, Brian A. and Robert L. Hoover
1997 Two Californias, Three Religious Orders and Fifty Missions: A Comparison of the Missionary Systems of Baja and Alta California. Pacific Coast Archaeological Society Quarterly 33(3):1-28.

Bean, Lowell John, and Charles R. Smith
1978 Gabrielino. *In* Handbook of North American Indians, vol. 8: California. Robert F. Heizer and William C. Sturtevant, eds. Pp. 538-549. Washington, DC: Smithsonian Institution.

Bean, Lowell John, and Sylvia Brakke Vane
1978 Cults and Their Transformations. *In* Handbook of North American Indians, vol. 8: California. Robert F. Heizer and William C. Sturtevant, eds. Pp. 662-672. Washington, DC: Smithsonian Institution.

Beebe, Rose Marie and Robert M. Senkewicz
1996 The End of the 1824 Chumash Revolt in Alta California: Father Vicente Sarría's Account. The Americas 53(2):273-283.

2007 Revolt at Mission San Gabriel, October 25, 1785: Judicial Proceedings and Related Documents. Rose Marie Beebe and Robert M. Senkewicz, trans., Boletín: The Journal of the California Mission Studies Association 24(2):15-29.

Beeler, Madison S.
1967 Introduction. *In* The Ventureño Confesionario of José Señán, O.F.M. Madison S. Beeler, ed. Pp. 1-6. Berkeley, California: University of California Press.

Bennyhoff, James A., and Richard E. Hughes
1987 Shell Bead and Ornament Exchange Networks Between California and the Western Great Basin. Anthropological Papers of the American Museum of Natural History 64(2):79-175.

Bernard, Julienne Lorraine
2008 An Archaeological Study of Resistance, Persistence, and Culture Change in the San Emigdio Canyon, Kern County, California. Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.

Blackburn, Thomas
1974 Ceremonial Integration and Social Interaction in Aboriginal California. *In* ‘Antap: California Indian Political and Economic Organization. Lowell John Bean and Thomas F. King, eds. Pp. 93-110. Ramona, California: Ballena Press.

Boivin, Nicole
2009 Grasping the Elusive and Unknowable: Material Culture in Ritual Practice. Material Religion: The Journal of Objects, Art and Belief 5(3):266-287.

Boscana, Gerónimo
1978 Chinigchinich: A Revised and Annotated Version of Alfred Robinson’s Translation of Father Gerónimo Boscana’s Historical Account of the Belief, Usages, Customs and Extravagancies of the Indians of this Mission of San Juan Capistrano Called the Acagchemen Tribe. John P. Harrington, ed. Alfred Robinson, trans. Classics in California Archaeology, 3. Banning, California: Malki Museum Press.

Corbett, Raymond
2007 The Grammar and Syntax of the Dead: A Regional Analysis of Chumash Mortuary Practice. Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.

Dartt-Newton, Deana and Jon M. Erlandson
2006 Little Choice for the Chumash: Colonialism, Cattle, and Coercion in Mission Period California. American Indian Quarterly 30(3-4):416-430.

DuBois, Constance Goddard
1908a Ceremonies and Traditions of the Diegueño Indians. The Journal of American Folklore 21(81):228-236.

1908b The Religion of the Luiseño Indians of Southern California. University of California Publications in American Archaeology and Ethnology 8(3):69-186.

Duggan, Marie Christine
2004 The Chumash and the Presidio of Santa Barbara: Evolution of a Relationship, 1782-1823. Santa Barbara, California: Santa Barbara Trust for Historic Preservation.

Durkheim, Émile
1995[1912] The Elementary Forms of Religious Life. Karen E. Fields, trans. New York: The Free Press.

Ehringer, Candace E.
2003 Roosters and Raptors: Cultural Continuity and Change at Big Dog Cave, San Clemente Island, California. M.A. thesis. Department of Anthropology, California State University, Northridge.

Fogelin, Lars
2007 The Archaeology of Religious Ritual. Annual Review of Anthropology 36:55-71.

Foucault, Michel
1984 The Foucault Reader. Paul Rabinow, ed. New York: Pantheon Books.

Friedman, Jonathan
1990 Being in the World: Globalization and Localization. Theory, Culture & Society 7:311-328.

1995 Global System, Globalization and the Parameters of Modernity. *In* Global Modernities. Mike Featherstone, Scott M. Lash, and Roland Robertson, ed. Pp. 69-90. London: SAGE Publications.

Gamble, Lynn H.
2008 The Chumash World at European Contact: Power, Trade, and Feasting among Complex Hunter-Gatherers. Berkeley: University of California Press.

Geertz, Armin W.
2004 Worlds in Collusion: On Social Strategies and Misrepresentations as Forces of Syncretism in Euro-American and Native American Affairs. *In* Syncretism in Religion: A Reader. Anita M. Leopold and Jeppe S. Jensen, eds. Pp. 237-254. New York: Routledge.

Geertz, Clifford
1973 The Interpretation of Cultures. New York: Basic Books, Inc.

Geiger, Maynard, and Clement W. Meighan
1976 As the Padres Saw Them: California Indian Life and Customs as Reported by the Franciscan Missionaries, 1813-1815. Maynard Geiger, trans. Santa Barbara, California: Santa Barbara Mission Archive Library.

Graham, Elizabeth
1998 Mission Archaeology. Annual Review of Anthropology 27:25-62.

Haas, Lisbeth
2011 The Life and Writing of Luiseño Scholar Pablo Tac, 1820-1841 *In* Pablo Tac, Indigenous Scholar: Writing on Luiseño Language and Colonial History, c. 1840, Lisbeth Haas, trans. and ed. Pp. 3-40. Berkeley: University of California Press.

Hackel, Steven W.
2013 Junípero Serra: California's Founding Father. New York: Hill and Wang.

Hale, Alice E.
1995 The World in a Basket: Late Period Gabrielino Ceremonial Features from the Lemon Tank Site, San Clemente Island, California. M.A. thesis. Department of Anthropology, California State University, Northridge.

Hale, Alice and Roy A. Salls
2000 The Canine Ceremony: Dog and Fox Burials of San Clemente Island. Pacific Coast Archaeological Society Quarterly 36(4):80-94.

Handler, Richard and Jocelyn Linnekin
1984 Tradition, Genuine or Spurious. The Journal of American Folklore 97(385):273-290.

Hardy, Ellen T.
2000 Religious Aspects of the Material Remains from San Clemente Island. Pacific Coast Archaeological Society Quarterly 36(1):78-96.

Hobsbawm, Eric
1983 Introduction: Inventing Traditions. *In* The Invention of Tradition. Eric Hobsbawm and Terence Ranger, ed. Pp. 1-14. Cambridge: Cambridge University Press.

Hodge, Frederick Webb
1978 Foreword. *In* Chinigchinich: A Revised and Annotated Version of Alfred Robinson's Translation of Father Gerónimo Boscana's Historical Account of the Belief, Usages, Customs and Extravagancies of the Indians of this Mission of San Juan Capistrano Called the Acagchemen Tribe. John P. Harrington, ed. Alfred

Robinson, trans. Pp. 11-14. Classics in California Archaeology, 3. Banning, California: Malki Museum Press.

Hudson, Travis and Thomas C. Blackburn
1986 The Material Culture of the Chumash Interaction Sphere, vol. 4: Ceremonial Paraphernalia, Games, and Amusements. Menlo Park, California: Ballena Press.

Hudson, Travis, Thomas Blackburn, Rosario Curletti, and Janice Timbrook
1977 Introduction. *In* The Eye of the Flute: Chumash Traditional History and Ritual as Told By Fernando Librado *Kitsepawit* to John P. Harrington. 2nd Edition. Travis Hudson, Thomas Blackburn, Rosario Curletti, and Janice Timbrook, eds. Pp. 1-6. Banning, California: Malki Museum Press.

Hudson, Travis, and Ernest Underhay
1978 Crystals in the Sky: An Intellectual Odyssey Involving Chumash Astronomy, Cosmology and Rock Art. Ballena Press Anthropological Papers No. 10, L. J. Bean and T. C. Blackburn, eds. Socorro, New Mexico: Ballena Press.

Hull, Kathleen L., John G. Douglass, and Andrew L. York
2013 Recognizing Ritual Action and Intent in Communal Mourning Features on the Southern California Coast. American Antiquity 78(1):24-47.

Hurtado, Albert L.
1999 Intimate Frontiers: Sex, Gender, and Culture in Old California. Albuquerque: University of New Mexico Press.

Johnson, John R.
1988 The People of Quinquina: San Clemente Island's Original Inhabitants as Described in Ethnohistoric Documents. Report prepared for the Natural Resources Office, Naval Air Station, North Island, San Diego, California.

Kimbro, Edna E., and Julia G. Costello, with Tevvy Ball
2009 The California Missions: History, Art, and Preservation. Los Angeles: The Getty Conservation Institute.

Kirsch, Thomas G.
2004 Restaging the Will to Believe: Religious Pluralism, Anti-Syncretism, and the Problem of Belief. American Anthropologist, New Series 106(4):699-709.

Kristjánsdóttir, Steinunn
2015 Becoming Christian: A Matter of Everyday Resistance and Negotiation. Norwegian Archaeological Review 48(1):27-45.

Kroeber, A. L.
1908 A Mission Record of the California Indians: From a Manuscript in the Bancroft Library. University of California Publications in American Archaeology and Ethnology 8(1):1-27.

1976[1925] Handbook of the Indians of California. New York: Dover Publications.

Lambropoulos, Vassilis
2001 Syncretism as Mixture and as Method. Journal of Modern Greek Studies 19(2):221-235.

Langenwalter, Paul E.
1986 Ritual Animal Burials from the Encino Village Site. Pacific Coast Archaeological Society Quarterly 22(3):63-97.

Lee, Georgia
1981 The Portable Cosmos: Effigies, Ornaments, and Incised Stone from the Chumash Area. Socorro, New Mexico: Ballena Press.

Lepowsky, Maria
2004 Indian Revolts and the Cargo Cults: Ritual Violence and Revitalization in California and New Guinea. *In* Reassessing Revitalization Movements: Perspectives from North America and the Pacific Islands. Michael Harkin, ed. Pp. 1-60. Lincoln, Nebraska: University of Nebraska Press.

Librado *Kitsepawit*, Fernando
1977 The Eye of the Flute: Chumash Traditional History and Ritual as Told By Fernando Librado *Kitsepawit* to John P. Harrington. 2nd Edition. Travis Hudson, Thomas Blackburn, Rosario Curletti, and Janice Timbrook, eds. Banning, California: Malki Museum Press.

Liebmann, Matthew
2012 Revolt: An Archaeological History of Pueblo Resistance and Revitalization in 17th Century New Mexico. Tucson, Arizona: The University of Arizona Press.

2013 Parsing Hybridity: Archaeologies of Amalgamation in Seventeenth-Century New Mexico. *In* The Archaeology of Hybrid Material Culture. Center for Archaeological Investigations, 39. Jeb J. Card, ed. Pp. 25-49. Carbondale, Illinois: Southern Illinois University Press.

Light, Timothy
2000 Orthosyncretism: An Account of Melding in Religion. Method & Theory in the Study of Religion 12(1/4):162-186.

Lightfoot, Kent G.
2005 Indians, Missionaries, and Merchants: The Legacy of Colonial Encounters on the California Frontiers. Berkeley: University of California Press.

Lightfoot, Kent G. and William S. Simmons
1998 Culture Contact in Protohistoric California: Social Contexts of Native and European Encounters. Journal of California and Great Basin Anthropology 20(2):138-170.

Lindquist, Galina and Simon Coleman
2008 Introduction: Against Belief? Social Analysis: The International Journal of Social and Cultural Practice 52(1):1-18.

Lorenzana, Apolinaria
2006 Recollections of Doña Apolinaria Lorenzana, "The Pious Woman," an Old Woman about Seventy-Five Years of Age, Dictated by Her in Santa Bárbara in March 1878 to Tomás Savage, Bancroft Library, 1878. *In* Testimonios: Early California through the Eyes of Women, 1815-1848. Rose Marie Beebe and Robert M. Senkewicz, eds. and trans. Pp. 169-192. Berkeley: Heyday Books.

Mann, Kristin Dutcher
2010 Christmas in the Missions of Northern New Spain. The Americas 66(3):331-351.

Martz, Patricia Carol
1984 Social Dimensions of Chumash Mortuary Populations in the Santa Monica Mountains Region. Ph.D. dissertation, Department of Anthropology, University of California, Riverside.

Meighan, Clement W.
2000 Overview of the Archaeology of San Clemente Island, California. Pacific Coast Archaeological Society Quarterly 36(1):1-17.

Milliken, Randall T., and Al W. Schwitalla
2012 California and Great Basin *Olivella* Shell Bead Guide. Walnut Creek, California: Left Coast Press.

Mitchell, Jon P. and Hildi J. Mitchell
2008 For Belief: Embodiment and Immanence in Catholicism and Mormonism. Social Analysis: The International Journal of Social and Cultural Practice 52(1):79-94.

Panich, Lee M.
2010 Missionization and the Persistence of Native Identity on the Colonial Frontier of Baja California. Ethnohistory 57(2):225-262.

Panich, Lee M. and Tsim D. Schneider
2015 Expanding Mission Archaeology: A Landscape Approach to Indigenous Autonomy in Colonial California. Journal of Anthropological Archaeology 40:48-58.

Pérez, Eulalia
2006 An Old Woman and Her Recollections, Dictated by Doña Eulalia Pérez, Who Lives at Mission San Gabriel at the Advanced Age of 139 Years, to D. Tomás Savage for the Bancroft Library, 1877. *In* Testimonios: Early California through the Eyes of Women, 1815-1848. Rose Marie Beebe and Robert M. Senkewicz, eds. and trans. Pp. 98-117. Berkeley: Heyday Books.

Perry, Jennifer E.
2007 Chumash Ritual and Sacred Geography on Santa Cruz Island, California. Journal of California and Great Basin Anthropology 27(2):103-124.

2013 The Archaeology of Ritual on the Channel Islands. *In* California's Channel Islands: The Archaeology of Human-Environment Interactions. Christopher S. Jazwa and Jennifer E. Perry, eds. Pp. 137-155. Salt Lake City: University of Utah Press.

Pye, Michael
1994 Syncretism versus Synthesis. Method & Theory in the Study of Religion 6(3):217-229.

Raab, L. Mark
2009a In the Shadow of Chiefdoms. *In* California Maritime Archaeology: A San Clemente Island Perspective. Pp. 179-195. Lanham, Maryland: AltaMira Press.

2009b San Clemente Island Archaeology and the Island Gabrielino. *In* California Maritime Archaeology: A San Clemente Island Perspective. Pp. 41-64. Lanham, Maryland: AltaMira Press.

2009c Vectors of Death and Native Messiahs. *In* California Maritime Archaeology: A San Clemente Island Perspective. Pp. 197-211. Lanham, Maryland: AltaMira Press.

Raab, L. Mark and William J. Howard
2009 Beads and the Great Basin Connection. *In* California Maritime Archaeology: A San Clemente Island Perspective. Pp. 123-141. Lanham, Maryland: AltaMira Press.

Raab, L. Mark and Andrew Yatsko
2009 California Galapagos. *In* California Maritime Archaeology: A San Clemente Island Perspective. Pp. 3-22. Lanham, Maryland: AltaMira Press.

Rabinow, Paul

1984 Introduction. *In* The Foucault Reader. Paul Rabinow, ed. Pp. 3-29. New York: Pantheon Books.

Reddy, Seetha N.

2015 Feeding family and ancestors: Persistence of traditional Native American lifeways during the Mission Period in coastal Southern California. Journal of Anthropological Archaeology 37:48–66.

Reid, Hugo

1968 The Indians of Los Angeles County: Hugo Reid's Letters of 1852. Robert F. Heizer, ed. Southwest Museum Papers, 21. Los Angeles: Southwest Museum.

Robbins, Joel

2011 Crypto-Religion and the Study of Cultural Mixtures: Anthropology, Value, and the Nature of Syncretism. Journal of the American Academy of Religion 79(2):408–424.

Robinson, Alfred

1978 The Translator's Introduction. *In* Chinigchinich: A Revised and Annotated Version of Alfred Robinson's Translation of Father Gerónimo Boscana's Historical Account of the Belief, Usages, Customs and Extravagancies of the Indians of this Mission of San Juan Capistrano Called the Acagchemen Tribe. John P. Harrington, ed. Alfred Robinson, trans. Pp. 15. Classics in California Archaeology, 3. Banning, California: Malki Museum Press.

Sandos, James A.

2004 Converting California: Indians and Franciscans in the Missions. New Haven: Yale University Press.

2007 Toypurina's Revolt: Religious Conflict at Mission San Gabriel in 1785. Boletín: The Journal of the California Mission Studies Association 24(2):4-14.

Schmidt, Bettina E.

2006 The Creation of Afro-Caribbean Religions and their Incorporation of Christian Elements: A Critique Against Syncretism. Transformation 23(4):236-243.

Schneider, Tsim D.

2015 Placing Refuge and the Archaeology of Indigenous Hinterlands in Colonial California. American Antiquity 80(4):695-713.

Señán, José

1967 The Ventureño Confesionario of José Señán, O.F.M. Madison S. Beeler, trans. and ed. Berkeley: University of California Press.

Strong, William Duncan
1929 Aboriginal Society in Southern California. Berkeley: University of California Press.

Tac, Pablo
2011 Pablo Tac’s Luiseño Grammar and History. *In* Pablo Tac, Indigenous Scholar: Writing on Luiseño Language and Colonial History, c. 1840, Lisbeth Haas, trans. and ed. Pp. 59-213. Berkeley: University of California Press.

Vellanoweth, René L., Barney G. Bartelle, Amira F. Ainis, Amanda C. Cannon, and Steven J. Schwartz
2008 A Double Dog Burial from San Nicolas Island, California, USA: Osteology, Context, and Significance. Journal of Archaeological Science 35:3111-3123.

Vizcaíno, Juan
1959 The Sea Diary of Fr. Juan Vizcaíno to Alta California 1769. Arthur Woodward, trans., Los Angeles: Glen Dawson.

Voss, Barbara L.
2008 The Archaeology of Ethnogenesis: Race and Sexuality in Colonial San Francisco. Berkeley: University of California Press.

Wahoff, Tanya L. and Andrew L. York
1999 Evidence for Post-Mission Period Native American Ceremonial Activity on San Clemente Island, California. Proceedings of the Fifth California Islands Symposium, edited by David R. Browne, Kathryn L. Mitchell, and Henry W. Chaney, Pp. 641-645. USDI Minerals Management Service, Pacific OCS Region.

Wallace, Anthony F. C.
1956 Revitalization Movements. American Anthropologist, New Series 58(2):264-281.

Watanabe, John M.
1990 From Saints to Shibboleths: Image, Structure, and Identity in Maya Religious Syncretism. American Ethnologist 17(1):131-150.

Waterman, T. T.
1910 The Religious Practices of the Diegueño Indians. University of California Publications in American Archaeology and Ethnology 8(6):271-358.

Webb, Edith Buckland
1952 Indian Life at the Old Missions. Los Angeles: Warren R. Lewis, Publisher.

White, Raymond C.
1957 The Luiseño Theory of "Knowledge". American Anthropologist, New Series 59(1):1-19.

1963 Luiseño Social Organization. University of California Publications in American Archaeology and Ethnology 48(2):91-194.

Woodward, Arthur
1941 Notes and News: Pacific Coast Area. American Antiquity 6(3):284-285.

1959 Introduction *In* The Sea Diary of Fr. Juan Vizcaíno to Alta California 1769. Arthur Woodward, trans., Pp. v-xxxxii. Los Angeles: Glen Dawson.

Yatsko, Andrew
2000 From Sheepherders to Cruise Missiles: A Short History of Archaeological Research at San Clemente Island. Pacific Coast Archaeological Society Quarterly 36(1):18-24.

Yatsko, Andrew and L. Mark Raab
2009 San Clemente Island. *In* California Maritime Archaeology: A San Clemente Island Perspective. Pp. 23-39. Lanham, Maryland: AltaMira Press.

APPENDIX A: TABLES

Table 4: Lemon Tank SCLI-1524 Feature Classification (based on Hale 1995)

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
1	00N/30E		y									3347	53, 54
2	21S/00E					y						3168-3172	87/71
3	07S/14E										y	1746, 1800-1807, 1809-1810	4 and 80
4	07S/14E, 08S/14E		y									1376-1381, 1383-1384, 1386-1394, 1415, 1740-1745, 1799, 1811, 1813-1814	3, 4, 61, 80, 81, 82, 83, and 84
5	07S/15E							y				0701-0703	6, 7, 8, 58, 59, 60, and 88
6	07S/15E							y				0704	5, 7, 8, 59, 60, and 88
7	07S/15E		y									0859	59, 60, 88, and 111
8	07S/15E	y										0698-0700	5, 6, 7, 59, 60, and 88

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
9	09S/14E		y									1902-1904, 1906-1923, 2629, 2633-2637, 3310-3311	18, 20, 63, 90
10	08S/15E, 09S/15E				y							3193-3195	9, 10, 13, 14, 16, 18, 20, 22, 23, 24, 25, 26, 62, 63, 64, 85, 86, 90, 91, 118, 127
11	08S/15E		y									2263, 2272-2296, 2349-2351, 2378	12, 15, and 16
12	08S/15E		y									2270-2271, 2329-2333	11, 13, 15, 16, and 17
13	08S/15E								y			2346-2348	10, 11, 12, 14, 16, and 17

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
14	08S/15E		y									2388-2389	10, 16, 17, and 67
15	08S/15E, 08S/16E					y						2383, 00796-00812	11, 12, 30, 99, 100, and 112
16	08S/15E		y									2384, 2386-2387, 2394-2395	10, 11, 12, 13, 14, 17, 58, and 67
17	08S/15E	y										2390-2392	11, 12, 13, 14, 15, 16, and 99
18	09S/14E		y		y							1487, 1517-1519	9, 19, 20, 21, 62, 63, 64, 65, 66, 67, 85, 86, 90, and 97

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
19	09S/14E		y									1499-1504, 1937-1942	9, 18, 20, 21, 62, 63, 64, 65, 66, 67, 85, 86, 90, and 97
20	09S/14E									y		2835-2838	18, 62, 63, 64, 85, 86, and 90
21	09S/14E		y									2638, 2809, 2811-2812	9, 10, 18, 19, 20, 62, 63, 64, 65, 66, 67, 85, 86, 90, and 91
22	09S/15E		y							y		2601-2603, 3042-3076	23, 26, 91, and 127
23	09S/15E						y					3089-3098, 3360-3377	22 and 26
24	09S/15E									y		2582-2588	25, 28, 91, and 127

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
25	09S/15E		y									3077-3088, 3099	10 and 24
26	09S/15E, 09S/16E	y										3324, 3326-3333	22 and 23
27	09S/16E, 09S/17E, 10S/16E, 10S/17E							y	y	y		1955, 2299, 2315, 2575-2581, 2821-2822, 2880-2884, 2886, 2951-2956, 3100, 3167, 3319-3320, 00880-00902, 01033-01037, 01040, 01152	28, 30, 41, 122, 123, 129, 130, 132, 133, 134, and 136
28	09S/16E									y		2361-2365, 2398-2399	15, 24, and 30
29	09S/16E		y									2298	26, 27, 132, and 134
30	09S/16E							y		y		2355-2360, 2367-2377, 2393, 2397	15, 27, 28, 32, and 100

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
31	09S/17E		y									2604, 2823-2824, 2881, 2885, 2888-2893	32, 34, 35, 37, and 89
32	08S/17E, 09S/17E		y	y								0710-0719, 1881-1883, 1948-1954, 2825, 2894-2909, 2957-2960, 2962-2967	31, 33, 96, and 100
33	09S/17E							y				1956-1959, 2936-2938	27 and 32
34	09S/17E									y		2910, 2968-2974, 3101-3104	27, 122, and 123
35	09S/18E		y									1009, 1521-1534, 3235-3239, 3241, 3268-3272, 3274	35, 36, 37/95, and 93
36	09S/18E		y									3240, 3242-3251, 3253-3256, 3275-3288, 3290-3294, 3297-3309	35, 36, 37/95, and 93

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
37	09S/18E		y									3173-3189 and possibly 2136, 2917, 3105-3122, 3314	31, 32, 35, 36, 89, 93, and 105
39	11S/15E		y									2400-2403, 2415, 2427, 2429-2432, 2930-2933	40, 43, and 94
40	11S/15E										y	2404-2407, 2572-2574, 2912-2916	39, 41, 42, 43, 44, and 94
41	10S/15E, 10S/16E, 11S/15E, 11S/16E				y					y		1268-1271, 1508-1526, 2408, 2410-2414, 2416-2422, 2428	27, 39, 40, 42, 43, 44, 94, 117, 120, 126, 128, 132, 134, and 139

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
42	11S/15E									y		2423-2426	40, 41, 44, 94, 102, 106, 115, 116, 120, 126, and 128
43	11S/15E, 12S/15E		y									1720-1728, 1784, 1790-1791, 1798-1799, 2435-2436, 2569	39, 40, 41, 46, 47, 94, and 126
44	10S/15E, 11S/15E									y		2570-2571, 2918-2927, 2934	41
45	12S/15E		y									1719	46, 47, 49, 50, 70, and 74
46	12S/15E		y									1716-1718	43, 45, 47, 49, 50, and 70

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
47	12S/15E		y									1712-1715	43, 45, 46, 49, 50, and 70
48	13S/15E							y				0743-0755	49, 50, 51, 68, 69, 70, and 98
49	13S/15E		y									0737-0738, 0742	48, 50, 51, 52, 68, 70, and 77
50	13S/15E	y										0739-0740	48, 49, 51, 52, 68, 70, and 77
51	13S/15E		y									0798-0802, 0849-0852	48, 49, 50, 52, 68, 69, 70, and 77
52	13S/15E		y									0853-0858	51 and 70
53	00N/29E, 00N/30E		y								y	2231	1
54	00N/30E		y									none	1
55	00N/26E	y										none	none
56	00N/18E		y									none	57

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
57	00N/18E		y									1209	56
58	07S/15E	y										none	3, 5, 11, 16, 59, 60, 80, and 88
59	07S/15E	y										none	5, 6, 7, 8, 58, 60, and 88
60	07S/15E	y										none	5, 6, 7, 8, 11, 15, 16, 58, and 88
61	08S/14E	y										none	4 and 90
62	09S/14E	y										none	9, 19, 20, 21, 63, 64, 65, 66, 67, 85, 86, 90, and 97
63	09S/14E						y					2817, 2832-2834	9, 18, and 20

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
64	09S/14E	y										possibly 1945 and 1947	9, 10, 18, 19, 20, 21, 62, 63, 65, 66, 67, 85, 86, 90, and 91
65	09S/14E	y										none	9, 10, 18, 19, 20, 21, 62, 63, 64, 66, 67, 85, 86, 90, and 91
66	09S/14E	y										none	9, 18, 19, 20, 21, 62, 63, 64, 65, 67, 85, 86, 90, and 97

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
67	08S/15E, 09S/14E				y							1076-1077, 1490-1495, 1870-1880, 2589-2600	9, 10, 13, 14, 16, 18, 20, 62, 63, 64, 85, 86, and 90
68	13S/15E	y										none	51
69	13S/15E	y										none	51, 52, and 68
70	13S/15E		y									0732, 0735, 0803-0805	45, 46, 47, 48, 49, 50, 51, 68, and 69
72	21S/00E					y						2023	73
73	21S/00E					y						1978, 2004, 3196-3222, possibly 3316-3317	2, 72, and 87/71
74	12S/14E	y										none	75, 76, and 103
75	12S/14E	y										none	74, 76, and 103
76	12S/14E	y										none	74, 75, and 103

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
77	13S/15E	y										none	48, 49, 50, 51, 52, 68, 69, and 77
80	07S/14E		y									1815-1816	3, 4, 81, 82, 83, and 84
81	07S/14E								y	y		1763, 1808, 1825-1826, 3323-3322	3, 4, 82, 83, and 84
82	07S/14E									y		01823	3, 4, 80, 81, 83, and 84
83	07S/14E		y									1822	3, 4, 81, 82, and 84
84	07S/14E		y									1747-1748, 1755, 1817-1821, 1824	3, 4, 61, 80, 81, 82, and 83
85	09S/14E		y									1925-1936	9, 86, and 90

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
86	09S/14E									y		2624-2627	either with features 9 and 85, with feature 85, or with feature 62
87	21S/00E	y										2015-2022	2 and 73
88	07S/15E		y									1707-1711	5, 7, 8, 58, 59, and 60
89	09S/17E	y										none	27, 31, 34, 32, 35, and 37
90	08S/14E, 09S/14E		y									1419-1435, 1468-1469, 1472-1480, 1520, 2630-2632, 3416	9 and 67
91	09S/15E									y		possibly 0941	20, 24, 86, 118, 127, and 128

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
93	09S/18E						y					2143, 3125-3126	35, 36, and 37/95
94	11S/15E									y		02523	39, 40, 41, 43, 44, and 126
96	08S/17E							y				00351	32 and 100
97	10S/14E		y									01265-01267	19, 21, 65, 66, 113, and 114
98	13S/14E	y	y									0369-0377	103
99	08S/16E		y									0783-0793	12, 13, 14, 15, 17, and 112
100	08S/16E		y									0454-0472, 0724, 0756	15, 30, 32, 96, 101, 107, and 112
101	08S/17E								y			01576-01585	107

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
102	10S/14E, 11S/14E										y	00597-00607	42, 97, 106, 115, and 120
103	13S/14E	y	y									00378-00379	98
104	08S/17E		y								y	00266, 00314-00331, 00333	104 and 105
105	08S/17E		y									none	104
106	11S/14E										y	00608-00619	39, 40, 42, and 102
107	08S/17E		y									00306-00310	96, 100, 101, and 104
108	07S/16E		y									00237-00244	6, 8, 15, 110, 125, and 137
109	17S/00W							y				0380-0386	119
110	07S/16E		y									00343-00346	7, 11, 15, 60, 88, 108, 131, and 137

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
111	07S/16E		y									00347-00349	7, 59, 60, and 110
112	08S/16E	y										00794-00795	15, 30, 99, and 100
113	10S/13E		y									00547-00551	97 and 114
114	10S/13E		y									none	97 and 113
115	10S/15E		y									none	42, 91, 97, 116, 117, 118, 120, 127, and 128
116	10S/15E						y					00673-00674, 01061	42, 91, 97, 115, 117, 118, 120, 127, and 128
117	10S/15E		y									00677-00684	41, 115, 116, 120, and 128

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
118	10S/15E						y					00675-00676	91, 116, 127, and 128
119	17S/01W		y									1141	109
120	10S/15E								y			00685-00709, possibly 01107	40, 41, 42, 44, 94, 116, 117, 118, 126, 127, and 128
121	10S/17E		y							y		01537-01560, 01575	122, 123, 129, 130, 133, 134, and 136
122	10S/17E									y		01108-01109	27, 34, 121, 123, and 129
123	10S/17E									y		01561-01572	121, 122, 129, 130, and 133

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
124	13S/19E							y				01142	138 and 140
125	07S/17E							y				00976-00977	108, 110, 131, and 137
126	11S/16ENWQTR		y									00926-00938, 01026-01032	40, 41, 42,94, 120, 128, 139, 141, and 142
127	10S/15E									y		01067	22, 23, 115, 116, 118, 128, 132, and 134
128	10S/15E									y		01065	41, 91, 115, 116, 117, 118, 120, 127, and 132

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
129	10S/17E						y					00861-00864, 01041	27 and 129
130	10S/17E		y									01062-01064	121 and 136
131	07S/17E		y									00991-01001	125, 135, and 137
132	10S/16E						y					01038-01039, 01042	27, 41, and 134
133	10S/17E									y		01084-01086	27, 121, 129, 136, and 139
134	10S/16E									y		01115-01124	27, 41, and 132
135	07S/17E		y									01043-01055	131
136	10S/17E									y		01066	121, 123, 130, and 133
137	07S/17E									y		01012-01024, 01284	110, 125, and 131
138	13S/19E		y									01527-01536	124

Feature	Excavation Unit	Structural	Behavioral	Ideological: Ceremonially Buried Turtle Shell Rattle	Ideological: Stone Bowls	Ideological: Human Burials and Grave Goods	Ideological: Avian Burials	Ideological: Canid Burials	Ideological: Ceremonial Basket-Trays	Ideological: Seed Caches	Ideological: Non-Seed Cache Deposits	Artifact Catalog Numbers	Nearby Features
139	10S/16E, 10.5S/16.5E				y							01069-01082	27, 126, 132, 133, 134, 141, and 142
140	13S/19E							y				01125	124
141	10.5S/16.5E						y					01083	133, 136, 139, and 142
142	10.5S/16.5E									y		01068	126, 133, 139, and 141

Table 5: Lemon Tank SCLI-1524 Structural Features (based on Hale 1995)

Feature	Excavation Unit	Contents	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
8	07S/15E	rocks; basalt bowl fragment stained with red ochre; faunal remains	outside central structure region, possibly associated with Burial 4 (Feature 15), characterized as post hole with rock reinforcements		
17	08S/15E	fish remains and 9 pieces of lithic debitage may have come from pit fill	possible post hole for central structure		
26	09S/15E	3 *Olivella* shell beads; 1 *Conus* shell bead; scraper; 12 pieces lithic debitage; 2 small steatite bowl fragments, including incised rim fragment with asphaltum on broken edge and a piece with a ground surface; mammal remains; fish remains; pile of *Haliotis sp.* shells wedged into the hollow formed by a semicircle of rocks	post hole for central structure (characterization as posthole may be due to auger testing)	4	none
50	13S/15E	fragments of at least 5 *Haliotis* shells (1 was whole, utilized shell); andesite scraper with trace of asphaltum	post hole for central structure		
55	00N/26E		possible post hole with stone wedges		
58	07S/15E		possible post hole outside central structure region, possibly associated with Burial 4 (Feature 15)		
59	07S/15E	yellow ash and charcoal; feature superposed over sacral area of partially articulated dog burial in Feature 5	possible post hole outside central structure region, possibly associated with Burial 4 (Feature 15)		
60	07S/15E		possible post hole outside central structure region, superposed over Feature 88, possibly associated with Burial 4 (Feature 15)		

Feature	Excavation Unit	Contents	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
61	08S/14E		post hole for central structure		
62	09S/14E	black ash; fish remains; shell fragments	post hole for central structure		
64	09S/14E	possibly capped by 2 *Haliotis sp*. containers	post hole for central structure		
65	09S/14E		post hole for central structure		
66	09S/14E		post hole for central structure		
68	13S/15E		post hole for central structure		
69	13S/15E		post hole for central structure		
74	12S/14E		post hole for central structure		
75	12S/14E		post hole for central structure		
76	12S/14E		post hole for central structure		
77	13S/15E		post hole for central structure		
87	21S/00E	sheephead pharyngeal; jasper scraper; 40 lithic flakes (5 with asphaltum traces); 2 possible groundstone fragments	post hole; same deposit as feature 71; possibly associated with Burials 1, 2, and 3 (Feature 73)		
89	09S/17E		post hole for central structure		
98	13S/14E	includes apparent post hole; 8 whole and 20 fragments of *Haliotis cracherodii* shells; 2 fragments of *Haliotis corrugata*; 1 fragment of *Astraea undosa*; 1 fragment of *Tivela*; 3 steatite fragments (2 refit to form part of bowl with round rim and exterior incising); vesicular basalt grinding slab; 1 *Olivella* shell bead; 2 lithic flakes; fish remains; deciduous human molar	post hole for central structure	1	yes
103	13S/14E	capped with a coarse-grained volcanic rock, pitted and stained with red ochre on both faces; lump of asphaltum	post hole for central structure		
112	08S/16E	chert bead drill, 1 lithic flake	post hole for central structure		

Table 6: Lemon Tank SCLI-1524 Behavioral Features (based on Hale 1995)

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
1	00N/30E				outside perimeter of central structure	food remains; concentration of 9 *Haliotis sp.* shells (2 with yellow stains)		shell stack		
4	07S/14E, 08S/14E	y		y		volcanic material; fish remains; black abalone shells with yellow stains on interior; giant Pacific cockle; clam shell tube bead; shell beads with red pigment		general refuse pit	90	none
7	07S/15E	y				partially burned and fused remains of 2 coiled baskets, 1 with coiling stitches slanted right (Gabrieliño) and 1 with coiling stitched slanted left (Chumash), 1 split grass foundation impregnated with asphaltum and 1 juncus rod bundle foundation; traces of seeds, shell, and fish bones from soil flotation		basketry		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
9	09S/14E	y		y	may be closely related to Feature 90	burned fishing equipment, some with traces of asphaltum; burned basketry (coiled juncus on grass bundle foundation) coated with asphaltum; 5 pieces of worked pinniped bone; 1 piece worked mammal bone; 2 circular, knobbed fishhooks, fishhook fragment, and 2 fishhook blanks of *Haliotis sp*.; 1 bone gorge; 2 fragments of 2-ply surfgrass cordage; ochre-stained owl limpet shell (*Lottia gigantaea*); lithic debitage; charred wood; avian remains; mammal bone; *Astraea undosa*; *Trachycardium quadrigenarium*		fishing kit		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
11	08S/15E	y		y	outside perimeter of central structure, west of human burial Feature 15	ground steatite; 6 steatite fragments (possibly from comal); 5 pinniped bacula (3 worked through grinding or incising, 3 burned, 1 painted with ground steatite); *Haliotis* fishhooks and fishhook blanks; 4 whole *Haliotis* shells (likely asphaltum containers); twined pouch made of 2-ply hemp fiber with z-twist; broken, conical, basalt or dacite pipe with intact bird bone stem closely associated with feature		fishing kit		
12	08S/15E	y		y	outside perimeter of central structure, west of human burial Feature 15	cache of raw red ochre; red-stained pestle; burned pinniped baculum; small steatite rim fragment from bowl or comal; ground steatite or baculum	ochre-stained fire-affected rock	pigment		
14	08S/15E				outside perimeter of central structure	traces of fish remains and 1 lithic flake may have come from pit fill; *Haliotis* shells may have been in pit		shell stack		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
16						fish remains, lithic debitage, steatite fragments, 2 incised comals		steatite objects		
18	09S/14E			y	within central structure	2 shell bowls (*Chione californiensis* and *Trachycardium quadrigenarium*) with asphaltum; steatite bowl broken (likely broken *in situ*) in 4 pieces with red ochre residue; shell ornament (*Trachycardium quadrigenarium*) ground, polished, perforated, and repaired or decorated with asphaltum		steatite fragments		
19	09S/14E	y				steatite pieces embedded in ash (likely fragments of comals, plaques, and possible shallow bowl)		steatite objects		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
21	09S/14E	y				coiled basketry fragment (likely willow) coated with asphaltum and likely burned; 140+ beads (only 10 cataloged: 2 *Olivella*, 1 *Norissia*, and 7 small *Mytilus* tube beads) under basketry; 248 *Olivella* beads; 3 bird bone beads; ash and charcoal fragments		basketry	11	yes
22	09S/15E	y		y	within central structure	ash; >200 *Olivella* and *Norissia* shell beads, some incised, some burned, and some with traces of red pigment; 2 burned *Trachycardium* ornament blanks; large cache of raw red ochre; Z-twist surf grass cordage; fish remains; seed cache with red maid (*Calendrinia ciliata*) seeds and fish vertebra (cache possibly from *Haliotis* shell); burned donut stone		beads, pigment, and cordage	214	yes

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
25	09S/15E	y				2 lithic flakes (1 burned); burned chalcedony core with asphaltum stain; fire-affected chert knife; 1 *Olivella* shell bead; charred spatulate tool (broken in 3 pieces); wood fragments; bone fragments; comal fragments; 3-rod bundle, S-twist *Juncus sp.* basketry fragment; 2-ply S-twist Indian hemp (*Apocynum cannabinum*) cordage; 2 tarring pebbles		beads, cordage, basketry, and debitage	1	bead broken, not measured
26	9S/15E				within central structure	food remains, concentration of *Haliotis sp.* shells nested within circle of fire-affected rocks		characterization as posthole may be due to auger testing	4	none
29	09S/16E				within central structure, adjacent to Feature 27	nest of 5 size-graduated *Haliotis sp.* shells (3 had signs of crushing on thin edge)		none provided		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
31	09S/17E					2 fragments of thickly asphaltumed, twined juncus basketry; 10 tarring pebbles, some with basketry impressions; chert knife with asphaltum on base; wood; 1 *Olivella* shell bead; 4 lithic flakes; faunal remains		water bottle	1	yes

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
32	08S/17E, 09S/17E	y		y	within central structure, east of Feature 30	most artifacts burned; *Haliotis* container with traces of asphaltum and hole drilled in one side; fragment of stone bowl used for grinding white-ish pigment; 1 *Olivella* shell bead; 2 scrapers; 48 lithic flakes; limpet shell ornament; remains of *Semicossyphus pulcher* and *Zalophus californianus*; 11 burned pieces of single dolphin scapula (*Grampus griseus*); 2 cutouts of burned *Haliotis* shell; charcoal; burned acorn cap; fish remains; 2 nested *Haliotis cracherodii* shells holding broken turtle shell rattle with rattle stones and asphaltum plug with 9 *Olivella* shell beads; 2 *Haliotis* shells; *Tegula funebralis* shell fragments; burned elements of *Semicossyphus pulcher*; hole end of steatite comal or plaque	groundstone bowl fragment caked with ground steatite	turtle shell rattle	9	none

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
35	09S/18E					2 basalt scrapers (1 cemented to *Haliotis* box with asphaltum); basalt knife coated with asphaltum (likely hafted); pestle (likely granite); large *Haliotis* bowl plugged with asphaltum; 3 pieces lithic debitage; shell pieces; asphaltum pieces; steatite bowl fragments; 2 bird bone whistles; 4 pieces worked deer metapodial; shaped and perforated piece of sandstone		none provided		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
36	09S/18E			y	outside perimeter of central structure	> 40 *Haliotis* shells (29 likely scoops based on edge wear); modified *Megathura crenulata* shell; shell box with *Haliotis fulgens* bottom and *H. cracherodii* top, contained fragment of twined, asphaltumed basketry; *Haliotis cracherodii* shell bowl with asphaltum-plugged siphon holes; 3 *Olivella* shell beads; 2 steatite fragments stained with asphaltum (1 from bowl, 1 unidentified); 19 scrapers (15 likely not utilized); 2 pieces groundstone (one stained with yellow ochre); chert drill; 30 fragments of lithic debitage; fish remains; dolphin remains; sea lion remains; elephant seal remains; dog remains; raven remains (likely from feature 93); owl remains		steatite fragments	3	none

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
37	09S/18E	y		y		3 thin-walled steatite bowl fragments, incised and stained with yellow ochre; 1 steatite comal fragment; 11 unidentified steatite fragments; fragment of asphaltumed, twined juncus water bottle; 152 *Olivella* shell beads, most burned, some incised, some stained with asphaltum, 1 stained with red ochre; lump of raw, red ochre; charred wood; fox remains; sea lion remains; fish remains		continuous with feature 95, which was absorbed into feature 37 in site records	152	yes

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
39	11S/15E	y		y		fire-affected rock; *Haliotis sp*. shell; cap of whole *Haliotis sp*. shells; fragments of *Haliotis corrugata* bowl, one asphaltum plug inlaid with *Olivella* shell bead, rim and dorsal surface of bowl painted with hematite; chunks of hematite; chalcedony knife with traces of asphaltum; baculum of Guadalupe fur seal (*Arctocephalus townsendii*) with abraded surface under bowl fragment; 1 *Norissia* shell bead; 1 *Conus* shell bead; 2 lithic flakes; fish remains; charcoal fragments	whole *Haliotis sp*. shells	bowl and pigment	3	yes

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
43	11S/15E, 12S/15E	y		y		several volcanic bowl fragments not included in feature; 2 fragments of apparent *Haliotis* shell rim tools; asphaltum; 2 lithic flakes; *Haliotis* container painted with hematite and containing soil; *Haliotis* bowl with remains of 3-rod bundle, coiled and asphaltumed juncus basket fused to ventral side; steatite donut stone fragment; whole, unfinished volcanic donut stone stained with hematite (1 drilled indentation off-center); 62 *Olivella* shell beads, 37 of them burned; fragments of worked pinniped bone with asphaltum stain; *Sebastes sp*. fin spine needle fragment; 2 lithic flakes; several *Haliotis cracherodii* shells		shell bowl	62	yes
45	12S/15E				outside perimeter of central structure	stack of 5 whole *Haliotis cracherodii* shells, 4 with worn and crushed edges; 2 steatite comal fragments found over feature were not included in feature		shell stack		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
46	12S/15E				outside perimeter of central structure	2 unidentified steatite fragments and 3 fragments of steatite donut stone were above feature 46 (not included in feature); size-graduated cluster of 7 *Haliotis cracherodii* shells, smallest and largest with slightly worn and crushed edges; 9 fragments of single *Haliotis* shell with asphaltum on ventral surface; trace of fish remains		shell stack and asphaltum bowl		
47	12S/15E				may be part of Feature 43	3 inverted *Haliotis cracherodii* shells covering 5 lithic flakes (1 stained with asphaltum); 3 *Olivella* shell beads, and a small sample of fish remains	shell cache	shell caches	3	yes
49	13S/15E					63 *Olivella* shell beads; 15 *Norissia* shell beads; *Haliotis sp*. bowl		beads	77	none

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
51	13S/15E	y				ash; burned fish and sea mammal remains; 9 pieces lithic debitage; volcanic scraper with traces of asphaltum on edge; 13 *Haliotis cracherodii* shells (11 utilized); 1 *Haliotis fulgens* shell; 2 *Olivella* shell beads		fire site	2	none
52	13S/15E	y			may be extension of Feature 51	ash; scraper and lithic debitage; fish remains; 2 whole *Haliotis cracherodii* shells (1 likely utilized); 1 *Haliotis cracherodii* rim fragment; coarse-grained volcanic bowl fragment with traces of asphaltum		fire site		
53	00N/29E, 00N/30E	y			outside perimeter of central structure	ash; fire-affected rocks; faunal remains; *Haliotis sp.* bowl; basalt donut stone; cache of abraded *Haliotis* shells and lithics		cooking fire (not mourning fire because lacks personal property items)		
54	00N/30E				outside perimeter of central structure	ash; lumps of baked clay		cooking fire (not mourning fire because lacks personal property items)		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
56	00N/18E				outside perimeter of central structure	ash; ^{14}C sample (1140 rcybp, 1025 cal BP)		cooking fire (not mourning fire because lacks personal property items)		
57	00N/18E	y			outside perimeter of central structure	ash; fire-affected rocks (some noted as bowl fragments)		cooking fire (not mourning fire because lacks personal property items)		
70	13S/15E	y	y			ash; fragments of 3 whole steatite objects that were biconically drilled (1 fire-stained, grease-stained teardrop-shaped comal with pan surface slightly hollowed; 1 triangular plaque-like object with possible shaft straightening groove on one face; triangular pendant-like object with 1 incised groove spiraling from drilled apex to base)		steatite objects		
80	07S/14E					fragmented Pacific White Venus shell (*Amiantis callosa*); fragmented serpentine donut stone		shell box and donut stone fragment		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
83	07S/14E	y				vesicular basalt mano fragment resting atop apparent hearth		mano fragment		
84	07S/14E					lithic debitage; Island fox (*Urocyon littoralis*) rib; fish remains; black abalone shells (*Haliotis cracherodii*) stained yellow on interiors; giant egg cockle; Pismo clam shell tube bead; human tooth		refuse pit	shell bead not found in curation boxes	
85	09S/14E	y	y			fire-affected comal fragments; incised plaque fragments		steatite fragments		
88	07S/15E				under Feature 60 (possible post hole)	2 pieces worked exotic shell; 1 piece volcanic debitage; mammal and fish remains		exotic shell		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
90	08S/14E	y			may be closely related to Feature 9	most artifacts burned and have traces of asphaltum; twined juncus and willow basketry; grass-bundle foundation, juncus-coiled basketry; 13 *Olivella* and *Haliotis* shell beads; 3 bird bone tube beads; lithic flakes, projectile point, and scraper; *Haliotis* fishhooks and blanks; worked bone (2 compound fishhook barbs and likely net spacer); asphaltumed 2-ply surf grass cordage; likely ornament blank of *Trachycardium quadrigenarium*		fishing kit	13	none (one possible in AC# 1524-1419)
97	10S/14E					upright, twined, asphaltumed basketry water bottle; asphaltum covered stick; radiocarbon sample taken from underneath bottle		basketry water bottle		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
98	13S/14E				outside perimeter of central structure	includes apparent post hole; 8 whole and 20 fragments of *Haliotis cracherodii* shells; 2 fragments of *Haliotis corrugata*; 1 fragment of *Astraea undosa*; 1 fragment of *Tivela*; 3 steatite fragments (2 refit to form part of bowl with round rim and exterior incising); vesicular basalt grinding slab; 1 *Olivella* shell bead; 2 lithic flakes; fish remains; deciduous human molar		post hole for central structure	1	yes
99	08S/16E	y				fire-affected rocks and fire-reddened earth; dacite core/hammerstone; lithic debitage; fish remains; mammal remains; charcoal sample with basketry-impressed asphaltum; *Haliotis cracherodii* shells (scoop with abraded rim, bowl with 1 siphon-hole plugged with asphaltum)		fire pit		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
100	08S/16E	y	y	y		irregular ring of 20 inverted black abalone shells (*Haliotis cracherodii*) around ashy pit; carbonized acorn (*Quercus sp*.); core/hammerstone with ochre stain, lithic debitage, fire-affected chalcedony projectile point, 3 pieces embedded in rust mass of unidentified iron object; *Mytilus californianus* shell bead; fish, sea mammal, and avian remains; steatite plaque (bi-conically bored and incised); pink abalone (*Haliotis corrugata*) bowl; asphaltum impression of apparent twined water bottle; fragment of 2-rod-bundle, coiled juncus basket		fire site	1	none
103	13S/14E			y		capped with a coarse-grained volcanic rock, pitted and stained with red ochre on both faces; lump of asphaltum	coarse-grained volcanic rock, pitted and stained with red ochre on both faces	post hole for central structure based on field notes, but likely a more formal deposit based on cap rock		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
104	08S/17E			y	outside perimeter of central structure	4 inverted *Haliotis cracherodii* shells; bowl fragment with ground steatite and trace of asphaltum, base of thin-walled vessel; *Haliotis* cutouts (possible fishhook blanks); lithic flakes, 1 may have been hafted; 2 *Olivella biplicata* shell beads, *Haliotis fulgens* bowl with worn lip; *Haliotis* rim tool (likely sweat scraper or scratcher); mammal remains; 2 harpoon barbs; fish remains	large bowl fragment coated with powdered steatite	fishing kit	3	none
105	08S/17E				outside perimeter of central structure	4 whole and 1 broken *Haliotis sp*. shells (all face down); 1 bead found but cataloged in general level contents		shell stack		
107	08S/17E			y	outside perimeter of central structure	12 whole and 5 fragments of *Haliotis sp.* shells; fire-affected rocks; 3 lithic flakes; 2 pieces poor-quality ochre; fish remains; 1 *Olivella* shell bead		shell stack	1	none
108	07S/16E					twined, asphaltum-coated basketry; lithic flakes; fish, bird, and mammal remains; acorn pieces		possible hearth		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
110	07S/16E	y				ash; abalone shells; rocks; twined, asphaltum-coated basketry; fishhook fragment; lithic flake; fish remains		possible hearth		
111	07S/16E					basalt pestle; *Haliotis sp.* shell; faunal remains; shell beads		pestle and shell	3	none
113	10S/13E	y		y	outside perimeter of central structure	charcoal; crushed *Tegula funebralis* shells; 13 lithic flakes; ochre-stained drill; 1 *Olivella* shell bead; 1 carbonized acorn; fish remains		fire site		
114	10S/13E				outside perimeter of central structure	charcoal		fire site		
115	10S/15E				within central structure	flat rocks		rock feature		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
117	10S/15E				SW of Feature 27 and SE of Feature 115	2 bifacially flaked, asphaltum-stained chert knife blades (1 in 3 pieces and 1 incomplete tip portion); 1 likely wooden handle with asphaltum; 1 likely bone handle with asphaltum; 13 seeds; 1 *Canis familiaris* bone; 1 *Semicossyphus pulcher* bone; 1 *Girella nigricans* bone; sea mammal remains; fish remains		chert knives		
119	17S/01W					asphaltum with basketry impression, likely water bottle		water bottle		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
121	10S/17E	y				fragment of basalt pestle; seed caches of features 122 and 123; ash; 19 whole *Haliotis cracherodii* shells; 9 beads (1 epiphysis of fish vertebra, 4 *Olivella* shell beads, 3 *Tivela* cylinders, 1 glass bead); 8 *Haliotis sp*. likely fishhook blanks; basketry fragment (asphaltum with impression of twined weave); *Haliotis sp*. shell bowl; fire-affected steatite comal fragments; worked bone (likely tip of gorge); 83 lithics; sea mammal remains; fish remains; burned acorn		fishhook blanks	6	yes, plus one glass bead

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
126	11S/16EN WQTR		y		super-posed SE border of feature 41	*Haliotis fulgens* bowl, hole broken through bottom; steatite comal with crosshatch incising made from bowl fragment; small, shallow steatite bowl fragment with bi-conic hole near rim; rectangular, incised, asphaltum-spotted steatite comal made from bowl fragment; steatite comal made from bowl fragment; steatite plaque with incised feather pattern; incised steatite plaque or comal; 3 *Olivella* shell beads; quartzite core/hammerstone; 2 asphaltum-stained rocks; 48 lithic flakes; fish remains		steatite pieces and shell bowl	3	yes
130	10S/17E	y		y	within central structure, south of Feature 121	2 chert cobbles with powdered steatite; fish remains; mammal remains; debitage; red ochre; charcoal; clay nodule (appears grooved)		originally considered seed cache, but contained no seeds		

Feature	Excavation Unit	Ash and Burned Personal Property	Incised Steatite Plaque	Pigment	Location	Contents	Cap	Hale's (1995) Interpretation	Shell Beads	Needle-drilled Shell Beads
131	07S/17E	y		y	outside perimeter of central structure	ash; steatite fragments; bluish pigment (likely ground steatite mixed with a binder); acorn fragments; fish and pinniped remains; 30 pieces lithic debitage; 2 *Olivella* shell beads		charcoal and pigment	2	none
135	07S/17E					collapsed water bottle of asphaltumed, twined juncus with mouth plug; lithic flakes; 2 cores; ovoid cutout of black abalone (*Haliotis cracherodii*); California sea lion (*Zalophus californianus*) remains; dog (*Canis familiaris*) remains; fish remains		basketry water bottle		
138	13S/19E	y				ash; burned basketry fragments consisting of at least 2 nested coiled baskets (larger basket coated with asphaltum); bird remains; fish remains; mammal remains; 69 lithic flakes; 2 possible fragments of groundstone; 1 *Olivella* shell bead		none provided	1	none

Table 7: Lemon Tank SCLI-1524 Ideological Feature: Ceremonially Buried Turtle Shell Rattle (based on Hale 1995)

Feature	Excavation Unit	Location	Contents	Shell Beads	Needle-drilled Shell Beads
32	08S/17E, 09S/17E	within central structure, east of Feature 30	most artifacts burned; *Haliotis* container with traces of asphaltum and hole drilled in one side; fragment of stone bowl used for grinding white-ish pigment; 1 *Olivella* shell bead; 2 scrapers; 48 lithic flakes; limpet shell ornament; remains of *Semicossyphus pulcher* and *Zalophus californianus*; 11 burned pieces of single dolphin scapula (*Grampus griseus*); 2 cutouts of burned *Haliotis* shell; charcoal; burned acorn cap; fish remains; 2 nested *Haliotis cracherodii* shells holding broken turtle shell rattle with rattle stones and asphaltum plug with 9 *Olivella* shell beads; 2 *Haliotis* shells; *Tegula funebralis* shell fragments; burned elements of *Semicossyphus pulcher*; hole end of steatite comal or plaque	9	none

Table 8: Lemon Tank SCLI-1524 Ideological Features: Stone Bowl Features (based on Hale 1995)

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
10	08S/15E, 09S/15E	adjacent to NW edge of central structure area, clustered with Feature 67	highly polished green schist donut stone fragment; basalt bowl fragments	adjacent to fire cluster in Unit 8S/14E; may be remains of destroyed personal property; bowl fragments from Features 10 and 67 fit together and may indicate that these features are continuous		
18	09S/14E	within central structure	2 shell bowls (*Chione californiensis* and *Trachycardium quadrigenarium*) with asphaltum; steatite bowl broken (likely broken *in situ*) in 4 pieces with red ochre residue; shell ornament (*Trachycardium quadrigenarium*) ground, polished, perforated, and repaired or decorated with asphaltum			

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
41	10S/15E, 10S/16E, 11S/15E, 11S/16E	within central structure area, clustered with Feature 139	volcanic bowl fragments surrounded by *Haliotis* seed cache boxes (including a *Haliotis assimilis* shell) and other artifacts; sandstone groundstone fragment, likely perforated; jasper and quartzite cores; 37 lithic flakes; volcanic pestle ground longitudinally on 2 surfaces, stained with yellow ochre; tarring pebbles; at least 2 shell containers excavated in 1989, including a seed cache; 2 fragments of human deciduous incisor; 2 schist or steatite effigies (pelican stone with beak missing and possible whale); fragmented volcanic pipe with bird bone mouthpiece attached with asphaltum; 249 assorted shell beads; barrel-shaped serpentine bead with biconically drilled hole; *Haliotis fulgens* shell bowl with one asphaltum-plugged siphon hole ornamented with *Olivella* shell bead; steatite fragment, possibly of a bowl; coiled juncus basketry; fish remains, sea mammal remains, albatross remains; deer remains	contains features 44 and 94	250	yes
67	08S/15E, 09S/14E	adjacent to NW edge of central structure area, clustered with Feature 10	10 basalt bowl fragments (likely same vessel); 2 teardrop-shaped *Haliotis* cutouts stained with ochre and asphaltum; highly polished green schist donut stone fragment; charred 3-rod-bundle coiled juncus basketry; 6 burned *Olivella* shell beads with asphaltum; chert scraper with asphaltum; 28 pieces lithic debitage (possibly includes a micro-drill); possible fragment of groundstone; red ochre; wood; fish remains; avian remains; rabbit remains; sea mammal remains;	adjacent to fire cluster in Unit 8S/14E; may be remains of destroyed personal property; bowl fragments from features 10 and 67 fit together and may indicate that these features are continuous	6	none

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
139	10.5S/16.5E	within central structure area, clustered with Feature 41	*Haliotis* shells and fragments; 11 *Olivella* shell beads; retouched venus clam shell (*Chione californiensis*) scraper; chert core; utilized andesite flake; 7 pieces lithic debitage; 26 fragments of at least 2 steatite bowls that were mended with asphaltum (1 bowl with grooved rim and vertical incising on body); faunal remains		11	none

Table 9: Lemon Tank SCLI-1524 Ideological Features: Human Burials and Grave Goods (based on Hale 1995)

Feature	Excavation Unit	Location	Contents	Comments
2	21S/00E	near Feature 73	37 fragments of steatite bowl, *Haliotis fulgens* bowl fragment, piece of cut *Haliotis fulgens*; 5 pieces lithic debitage, 1 with asphaltum on edge; calcined, asphaltum-stained bird bone	likely associated with burials in Feature 73
15	08S/15E, 08S/16E		Burial 4: complete remains of woman in her early 30s, brachycephalic, buried face-down in flexed frog position; twined basketry water bottle; *Haliotis corrugata* bowl inverted over cervical region; *Haliotis cracherodii* bowl and 3 modified shells; *Olivella* shell bead; lithic debitage; faunal remains; flat, circular rock with apparent bird-head profile in black paint nearly over cranium	good condition of bones suggests burial occurred during late prehistoric/early historic period
72	21S/00E	near Feature 73	large, highly polished steatite donut stone fragment (about 2/3 of original artifact)	likely associated with burials in Feature 73
73	21S/00E	near SW rim of midden area far from central structure; likely associated with Feature 2	partial remains of 2 adults and 1 child (remains of adults likely older than remains of child, whose burial likely disturbed burials of adults); asphaltum-coated water bottle; 5 whole *Haliotis* shells, 1 with asphaltum; *Haliotis sp.* container with fill; 1 *Mytilus* shell bead; 1 *Conus* shell bead; 42 lithic flakes; fish remains, mammal remains; quartz pebble	child's burial likely intrudes on adults' burial, artifacts therefore likely associated with child's burial

Table 10: Lemon Tank SCLI-1524 Ideological Features: Avian Burials (based on Hale 1995)

Feature	Excavation Unit	Location	Animal	Contents	Orientation	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
23	09S/15E	within central structure area	juvenile red-tailed hawk (*Buteo jamaicensis*)	juvenile red-tailed hawk (*Buteo jamaicensis*) burial; 415 *Olivella* shell beads; 56 *Norissia* shell beads; 1 likely *Tivela* shell bead; stack of 3 *Haliotis* shells; small *Haliotis* scoop; chalcedony core; 5 lithic flakes; charred wood; asphaltum; fish remains	vertical, head down	right and left scapulae of California sea lion (*Zalophus californianus*)		438	none
63	09S/14E	along central structure wall in burned personal property fire area in unit 9S/14E	juvenile red-tailed hawk (*Buteo jamaicensis*)	juvenile red-tailed hawk (*Buteo jamaicensis*) burial; ash; 2 fragments of juncus basketry; 2 fragments of *Trachycardium quadrigenarium* with traces of asphaltum	vertical, head down, facing east with talons pointing west		bones not burned		
93	09S/18E	outside central structure area, adjacent to burned personal property Feature 35	juvenile raven (*Corvus corvax*)	juvenile raven (*Corvus corvax*) burial; jaw of *Semicossyphus pulcher*; *Zalophus californianus* scapula	articulated, head up	*Zalophus californianus* scapula			
116	10S/15E	within central structure area	juvenile peregrine falcon (*Falco peregrinus*)	juvenile peregrine falcon (*Falco peregrinus*) burial; California barracuda (*Sphyraena argentaea*) bones, likely from falcon's stomach; rock cap	vertical, head down	rock			

Feature	Excavation Unit	Location	Animal	Contents	Orientation	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
118	10S/15E	within central structure area	juvenile red-tailed hawk (*Buteo jamaicensis*)	juvenile red-tailed hawk (*Buteo jamaicensis*) burial; 9 shell beads	articulated anterior skeleton, head up			9	none
129	10S/17E	within central structure area beneath Feature 27	juvenile peregrine falcon (*Falco peregrinus*)	juvenile peregrine falcon (*Falco peregrinus*) burial; burned fragments of fish and mammal remains; burned acorn; 2 lithic flakes; 3 beads (1 *Norissia norissii* and 2 *Olivella biplicata* shell beads)	articulated, vertical, head down		beneath Feature 27 (dog burial)	3	yes
132	10S/16E	within central structure area	juvenile red-tailed hawk (*Buteo jamaicensis*)	juvenile red tailed hawk (*Buteo jamaicensis*) burial; chert projectile point; fragment of sandstone donut stone; small rocks capped deposit	articulated, vertical, head down	small rocks			
141	10.5S/16.5E	within central structure area	juvenile red-tailed hawk (*Buteo jamaicensis*)	juvenile red tailed hawk (*Buteo jamaicensis*) burial	vertical, head down				

Table 11: Lemon Tank SCLI-1524 Ideological Features: Canid Burials (based on Hale 1995)

Feature	Excavation Unit	Location	Animal	Contents	Orientation	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
5	07S/15E	outside central structure area, Feature 59 superposed over sacrum	adult dog (*Canis familiaris*)	adult dog (*Canis familiaris*) burial; fragment of chalcedony knife blade adjacent to sacrum, large and small *Haliotis sp.* shells, fish remains	likely buried in quarters, lower vertebral column and pelvis articulated		cut marks on sacrum; one femur shaft ring-cut, snapped, and removed		
6	07S/15E	outside central structure area	juvenile fox (*Urocyon littoralis*)	juvenile fox (*Urocyon littoralis*) burial	partially articulated skeleton, vertical, head up				
27	09S/16E, 09S/17E, 10S/16E, 10S/17E	within central structure area, peregrine falcon burial Feature 129 east of dog's hindpaws	adult dog (*Canis familiaris*)	large, ovoid caprock; adult dog (*Canis familiaris*) burial, humeri covered with red pigment; large, white quartz crystal on left shoulder; large chert bifacial blade within abdominal cavity with point oriented toward first lumbar vertebra; seed cache; human molar; fragments of coiled, split-stem juncus basketry; quartz scraper, chalcedony flake; *Norissia* shell bead; acorn remains; fish remains; sea mammal remains	on right side, loosely flexed, head oriented south, chest oriented east	ovoid stone	both humeri coated with red pigment, most seed caches in site arranged in rough circle around Feature 27	37	yes

Feature	Excavation Unit	Location	Animal	Contents	Orientation	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
30	09S/16E	within central structure area	adult dog (*Canis familiaris*)	capstone with greenish-white pigment; adult dog (*Canis familiaris*) burial; 19 *Olivella* shell beads (17 articulated); *Haliotis* box with seed cache overlying cervical vertebrae; *Haliotis sp*. bowl inverted over scapulae; fragment of vesicular basalt bowl over central part of deposit; 5 lumps raw red ochre; 12 whole *Haliotis cracherodii* shells; 11 pieces of basketry-impressed asphaltum; drill and quartz drill tip; 25 lithic flakes; fish remains	decapitated, likely buried in quarters	ovoid, flat stone (underside caked with ground steatite) over skull	femur shafts ring-cut, snapped and removed (likely with metal knife); femur shafts not found; ribs stained with ochre	19	yes
33	09S/17E	within central structure area, south of adult dog burial Feature 30 and turtle shell rattle burial Feature 32	juvenile dog (*Canis familiaris*)	juvenile dog (*Canis familiaris*) burial; *Haliotis sp*. box (under burial) containing charcoal, *Tegula funebralis* and *Tivela stultorum* fragments, and fish remains; 2 scrapers; lithic debitage	vertical, head up, articulated				

Feature	Excavation Unit	Location	Animal	Contents	Orientation	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
48	13S/15E	outside central structure area, near burned personal property Feature 138	juvenile fox (*Urocyon littoralis*)	partial juvenile fox (*Urocyon littoralis*) burial; spatulate deer bone ornament (1 end broken off and 1 end perforated with 3 drilled holes); drilled *Haliotis* ornament; 274 *Olivella* and *Norissia* shell beads; fragments of *Laevicardium elatum* bowl with asphaltum-mended edges; fire-hardened chert scraper; 39 whole or fragmented *Haliotis cracherodii* shells, some with utilized edges; 3 fragments bird bone; fish remains	parts of disarticulated fox		includes collection of personal property items	274	none
96	08S/17E	outside central structure area	juvenile fox (*Urocyon littoralis*)	juvenile fox (*Urocyon littoralis*) burial; piece of turtle shell ornamented with a shell bead	head-down in fetal position				
109	17S/00W	outside central structure area	juvenile fox (*Urocyon littoralis*)	juvenile fox (*Urocyon littoralis*) burial; fish remains; California sea lion remains; 17 lithic flakes; abalone shell; 169 shell beads (AC 0401 and 0412) catalogued in general level contents	fetal position with dorsal curve down				

Feature	Excavation Unit	Location	Animal	Contents	Orientation	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
124	13S/19E	outside central structure area, near burned personal property Feature 138	juvenile dog (*Canis familiaris*)	juvenile dog (*Canis familiaris*) burial	extended position oriented south with rostrum facing northeast		fox burial likely disturbed by burning activity, dog does not appear buried (may have died in fire or at a later time)		
125	07S/17E	outside central structure area, adjacent to burned personal property Feature 131 in Unit 07S/17E	adult fox (*Urocyon littoralis*)	adult fox (*Urocyon littoralis*) burial; 2 lithic flakes	partially articulated in fetal position, head up				
140	13S/19E	outside central structure area	juvenile fox (*Urocyon littoralis*)	juvenile fox (*Urocyon littoralis*) burial	articulated, head down, body in "S" twist				

Table 12: Lemon Tank SCLI-1524 Ideological Features: Ceremonial Basket-Trays (based on Hale 1995)

Feature	Excavation Unit	Location	Contents	Basket Type	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
13	08S/15E	outside central structure area, near burial Feature 15	2 3-rod-bundle coiled juncus basket-trays, stacked, with openwork mat between them; knotted 2-ply Indian hemp cordage (possible net) on top of baskets	3-rod-bundle coiled juncus				
27	09S/16E, 09S/17E, 10S/16E, 10S/17E	within central structure area	large, ovoid caprock; adult dog (*Canis familiaris*) burial, humeri covered with red pigment; large, white quartz crystal on left shoulder; large chert bifacial blade within abdominal cavity with point oriented toward first lumbar vertebra; seed cache; human molar; fragments of coiled, split-stem juncus basketry; quartz scraper, chalcedony flake; *Norissia* shell bead; acorn remains; fish remains; sea mammal remains	split-stem rush (*Juncus sp*.) coiled over foundation of rush	large, ovoid caprock	part of adult dog burial; likely includes Feature 129 and at least 2 seed caches	37	yes
81	07S/14E	near Feature 3, in apparent mourning fire area in Unit 7S14E outside central structure area	2 baskets, stacked, with knotted cordage (possibly fishing net) between them; seeds	split-stem rush (*Juncus sp*.) coiled over foundation of rush	pinniped scapula			
101	08S/17E	outside central structure area, near burial Feature 15	burned 3-rod-bundle, S-twined coiled juncus basket; burned, knotted cordage (possibly carrying net); burned acorn (*Quercus sp*.) fragment	3-rod-bundle, S-twined coiled juncus				

Feature	Excavation Unit	Location	Contents	Basket Type	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
120	10S/15E	within central structure area, adjacent to Feature 41	shell, stone, and bone objects arrayed around a large barnacle (*Coronula diadema*) on coiled juncus basket-tray; 13 tear-drop shaped *Haliotis sp.* cutouts; 3 shaped sandstone objects; four steatite objects; 2 chalk paint wells; bone awl of California sea lion fibula pointing toward magnetic north; powdered red ochre covered assemblage	split-stem rush (*Juncus sp.*) coiled over foundation of rush				

Table 13: Lemon Tank SCLI-1524 Ideological Features: Seed Caches (based on Hale 1995)

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
20	09S/14E	in apparent burned personal property area in Unit 9S/14E, overlapping post hole features that likely delineate wall of central structure; over feature 63 (raptor burial)	box formed of 2 facing *Haliotis cracherodii* shells containing red maid (*Calendrinia ciliata*) seeds and 1 adult human tooth	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		
22	09S/15E	within central structure	ash; >200 *Olivella* and *Norissia* shell beads, some incised, some burned, and some with traces of red pigment; 2 burned *Trachycardium* ornament blanks; large cache of raw red ochre; Z-twist surf grass cordage; fish remains; seed cache with red maid (*Calendrinia ciliata*) seeds and fish vertebra (cache possibly from *Haliotis* shell); burned donut stone	component of larger feature, distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27	214	yes
24	09S/15E		3 deciduous human teeth; container formed of 2 *Haliotis cracherodii* shells that were stained (probably hematite); deposit of red maid (*Calandrinia ciliata*) seeds; 1 *Olivella* shell bead; asphaltum with basketry impression; ash	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27	1	none

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
27	09S/16E, 09S/17E, 10S/16E, 10S/17E	within central structure area, peregrine falcon burial Feature 129 east of dog's hindpaws	large, ovoid caprock; adult dog (*Canis familiaris*) burial, humeri covered with red pigment; large, white quartz crystal on left shoulder; large chert bifacial blade within abdominal cavity with point oriented toward first lumbar vertebra; seed cache; human molar; fragments of coiled, split-stem juncus basketry; quartz scraper, chalcedony flake; *Norissia* shell bead; acorn remains; fish remains; sea mammal remains	component of larger feature, distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27	37	yes
28	09S/16E		*Haliotis sp*. bowl and container lined with asphaltum and stained yellow; stack of 15 whole and 2 fragmented *Haliotis cracherodii* shells (stained yellow); fish remains; steatite fragment of comal or plaque; red maid seeds (*Calindrinia ciliata*), used for radiocarbon date: ^{14}C sample (300 ±60 rcybp, 409 cal BP)	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		
30	09S/16E	within central structure area	capstone with greenish-white pigment; adult dog (*Canis familiaris*) burial; 19 *Olivella* shell beads (17 articulated); *Haliotis* box with seed cache overlying cervical vertebrae; *Haliotis sp*. bowl inverted over scapulae; fragment of vesicular basalt bowl over central part of deposit; 5 lumps raw red ochre; 12 whole *Haliotis cracherodii* shells; 11 pieces of basketry-impressed asphaltum; drill and quartz drill tip; 25 lithic flakes; fish remains	component of larger feature, distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27	19	yes

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
34	09S/17E		*Haliotis sp*. bowl with hole punched from ventral side; human deciduous molar; 1 *Olivella* shell bead; asphaltum piece, 7 lithic flakes; caudal vertebra of tuna (*Thunnus alalunga*); ash; *Haliotis* container (with traces of asphaltum) containing decayed organic material and *Haliotis* scoop	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27	1	yes
41	10S/15E, 10S/16E, 11S/15E, 11S/16E	within central structure area, clustered with Feature 139	volcanic bowl fragments surrounded by *Haliotis* seed cache boxes (including a *Haliotis assimilis* shell) and other artifacts; sandstone groundstone fragment, likely perforated; jasper and quartzite cores; 37 lithic flakes; volcanic pestle ground longitudinally on 2 surfaces, stained with yellow ochre; tarring pebbles; at least 2 shell containers excavated in 1989, including a seed cache; 2 fragments of human deciduous incisor; 2 schist or steatite effigies (pelican stone with beak missing and possible whale); fragmented volcanic pipe with bird bone mouthpiece attached with asphaltum; 249 assorted shell beads; barrel-shaped serpentine bead with biconically drilled hole; *Haliotis fulgens* shell bowl with one asphaltum-plugged siphon hole ornamented with *Olivella* shell bead; steatite fragment, possibly of a bowl; coiled juncus basketry; fish remains, sea mammal remains, albatross remains; deer remains	contains Features 44 and 94; distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27	250	yes

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
42	11S/15E	embedded in southwest border of Feature 120	rectangular object made of sea mammal scapula (3 edges ground smooth, 1 edge broken) stained with red ochre; deposit of grain or seeds; fragment of *Haliotis sp*. shell with asphaltum; red ochre; trace of fish remains	likely associated with Feature 120		
44	10S/15E, 11S/15E		concentrated deposit of seeds overlying a *Haliotis* shell, dorsal side up; segment of articulated beads; human deciduous premolar; 548 *Olivella* shell beads, some with traces of asphaltum and incised; 9 *Norissia* shell beads; charred wood; traces of fish remains	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27	558	none
81	07S/14E	near Feature 3, in apparent mourning fire area in Unit 7S14E outside central structure area	2 baskets, stacked, with knotted cordage (possibly fishing net) between them; seeds	component of larger feature, distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		
82	07S/14E	outside central structure area	burned wood and seeds	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
86	09S/14E	in apparent burned personal property area in Unit 9S/14E, overlapping post hole features that likely delineate wall of central structure (field notes unclear about location)	2 *Haliotis cracherodii* boxes: Box A (ash, charcoal, 2 types of seeds, mammal remains, and fish remains) and Box B (2 types of seeds, seed husks, charcoal, asphaltum, fish remains, and shell fragments)	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		
91	09S/15E		seed cache in *Haliotis sp*. container	designated as feature after post-season review of lab director's notes; distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		
94	11S/15E		seed cache	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
121	10S/17E	contains Features 122 and 123	fragment of basalt pestle; seed caches of features 122 and 123; ash; 19 whole *Haliotis cracherodii* shells; 9 beads (1 epiphysis of fish vertebra, 4 *Olivella* shell beads, 3 *Tivela* cylinders, 1 glass bead); 8 *Haliotis sp*. likely fishhook blanks; basketry fragment (asphaltum with impression of twined weave); *Haliotis sp*. shell bowl; fire-affected steatite comal fragments; worked bone (likely tip of gorge); 83 lithics; sea mammal remains; fish remains; burned acorn	seed caches are Features 122 and 123, which are inside Feature 121	6	yes, plus one glass bead
122	10S/17E	within Feature 121	*Haliotis sp*. shell filled with seeds and soil; capped with flat rock	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27; likely historic based on beads in Feature 121, which contains Feature 122		
123	10S/17E	within Feature 121	container made of *Haliotis fulgens* and *Haliotis cracherodii* shells (hole punched in *Haliotis cracherodii* shell, trace of asphaltum); 6 whole *Haliotis* shells; burned utilized chalcedony flake with asphaltum; chalcedony scraper; 8 lithic flakes; burned remains of 1 sub-adult Guadalupe fur seal (*Arctocephalus townsendii*); fish remains	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27; likely historic based on beads in Feature 121, which contains Feature 123		

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
127	10S/15E		*Haliotis sp*. box filled with soil and seeds	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		
128	10S/15E		cache of small white seeds capped with flat rock	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		
133	10S/17E		3 seed caches (2 within *Haliotis sp.* shells and 1 pile of loose seeds)	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		
134	10S/16E		cache of likely wheat chaff in large limpet shell; 7 fragments of human teeth; ground steatite fragment; pecten shell; 22 *Olivella* shell beads; fragment of basketry with asphaltum; 5 lithic flakes (1 possibly obsidian); fish remains	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27	22	none
136	10S/17E		seed cache	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		

Feature	Excavation Unit	Location	Contents	Comments	Shell Beads	Needle-drilled Shell Beads
137	07S/17E	outside central structure area	ash; cap of California sea lion (*Zalophus californianus*) bone; fish remains; hole end of steatite fragment (likely plaque or comal); carbonized seeds; modified Giant Pacific Cockle (*Trachycardium quadrigenarium*) stained with red ochre; deciduous human incisor; lithic debitage (variety of materials); 222 *Olivella* and *Norissia* shell beads (only 210 in curation collection)	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27	210	none
142	10.5S/16.5E		*Haliotis sp*. box filled with soil and small black seeds; large stack of *Haliotis* shells immediately north of feature	distribution of seed caches suggests they may have been associated with adult dog burial in Feature 27		

Table 14: Lemon Tank SCLI-1524 Ideological Features: Non-Seed Caches (based on Hale 1995)

Feature	Excavation Unit	Location	Contents	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
3	07S/14E	near Feature 81, in apparent mourning fire area in Unit 7S14E outside central structure area	asphaltum, charcoal (likely tarring kit); lithic flakes; 2 black abalone shell (*Haliotis cracherodii*) containers containing charcoal, asphaltum, and tarring pebble; clam shell tube bead; 2 *Olivella* shell beads; 2 pinniped scapulae		likely storage or ritual burial	3	yes
40	11S/15E	adjacent to majority group of seed caches around adult dog burial Feature 27	box made of 2 *Haliotis sp*. shells filled with >740 chalcedony flakes, a piece of oxidized iron, ash, and fragment of *Tegula funebralis* shell; quartz drill; 2 lithic flakes; traces of fish remains		no seeds or teeth		
53	00N/29E, 00N/30E		ash; fire-affected rocks; faunal remains; *Haliotis sp.* bowl; basalt donut stone; cache of abraded *Haliotis* shells and lithics				
102	10S/14E, 11S/14E		*Haliotis fulgens* bowl containing lighter color of soil than surrounding matrix *Haliotis cracherodii* scoop; 2 *Olivella* shell beads; bone gorge; 2 lithic flakes; sea mammal remains; fish remains		no seeds or teeth	2	none

Feature	Excavation Unit	Location	Contents	Cap	Comments	Shell Beads	Needle-drilled Shell Beads
104	08S/17E	outside perimeter of central structure	4 inverted *Haliotis cracherodii* shells; bowl fragment with ground steatite and trace of asphaltum, base of thin-walled vessel; *Haliotis* cutouts (possible fishhook blanks); lithic flakes, 1 may have been hafted; 2 *Olivella biplicata* shell beads, *Haliotis fulgens* bowl with worn lip; *Haliotis* rim tool (likely sweat scraper or scratcher); mammal remains; 2 harpoon barbs; fish remains	large bowl fragment coated with powdered steatite	fishing kit	3	none
106	11S/14E	near Feature 102	2 large California sea lion (*Zalophus californianus*) scapulae capping deposit; *Haliotis fulgens* bowl; several whole *Haliotis cracherodii* shells; *Haliotis cracherodii* scoop with utilized edge; 21 lithic flakes; 1 utilized chalcedony flake; sea mammal remains; fish remains; 2 fragments of burned acorn; oxidized metal fragment	2 California sea lion (*Zalophus californianus*) scapulae	no seeds or teeth		

Table 15: Lemon Lank (CA-SCLI-1524) 1988 Excavation Site Records: Beads in Features

AC	Unit	Level	Artifact	Material	No	Weight	Length	Width	Comment	Feature
1524-0737	13S15E F4	30-40	bead, cupped callus	olivella	62	1.67	185	0		49
1524-0738	13S15E F4	30-40	bead, cupped wall	olivella	1	0.08	0.02	0		49
1524-0742	13S15E F4	30-40	bead, disc	norissia	15	0.41	0	0		49
1524-0753	13S15E F2	30-40	bead, cupped callus	olivella	252	6.17	0	0		48
1524-0754	13S15E F2	30-40	bead, disc	norissia	10	0.42	0	0		48
1524-0755	13S15E F2	30-40	bead, disc	olivella	12	0.51	0	0		48
1524-0799	13515E F7	40-50	bead, cupped callus	olivella	2	0.05	0	0		51
1524-1419	08S14E	20-30	bead, lipped	olivella	1	0.09	0	0		90
1524-1420	08S14E	20-30	bead, disc	olivella	3	0.08	0	0		90
1524-1430	08S14E F2	20-35	bead	olivella	6	0.13	0	0		90
1524-1431	08S14E F2	20-35	bead, disc, incised	olivella	2	0.06	0	0		90
1524-1432	08S14E F2	20-35	bead, disc	haliotis	1	0.01	0	0		90
1524-1713	12S15E F4	30-40	bead	olivella	3	0.11	0	0		47
1524-1722	12S15E F1	20-30	bead, cupped wall	olivella	25	1.45	0	0		43
1524-1728	12S15E F1	30-40	bead, cupped wall	olivella	37	2.17	0	0		43
1524-1743	07S14E F1	40-60	bead, cupped callus	olivella	5	0.13	0	0		4
1524-1809	07S14E F2	30-40	bead, cupped callus	olivella	1	0.02	0	0		3
1524-1810	07S14E F2	30-40	bead, cupped callus	olivella	1	0.02	0	0		3
1524-1811	07S14E F1	30-40	bead, cupped callus	olivella	2	0.08	0	0		4
1524-1814	07S14E F1	30-40	bead, disc	norissia	2	0.07	0	0		4
1524-1886	09S15E	10-20	bead, disc	norissia	6	0.19	0	0		4
1524-1887	09S15E	10-20	bead, cupped callus	olivella	32	0.88	0	0		4
1524-1888	09S15E	10-20	bead, disc	olivella	43	1.1	0	0		4
1524-1953	09S17E F3	10-20	bead, disc wall	olivella	1	0.07	0	0		3
1524-2357	09S16E F5	30-40	bead, disc	olivella	17	0.51	0	0		30
1524-2359	09S16E F5	30-40	bead, cupped wall	olivella	1	0.06	0	0		30
1524-2370	09S16E F5	40-50	bead, cupped wall	olivella	1	0.02	0	0		30
1524-2400	11S15E F1	30-40	bead, disc	haliotis	1	0	0	0		39
1524-2401	11S15E F1	30-40	bead, cupped wall	conus	1	0	0	0		39

AC	Unit	Level	Artifact	Material	No	Weight	Length	Width	Comment	Feature
1524-2417	11S15E F3	30-40	bead, disc	olivella	1	0	0	0		41
1524-2421	11S15E F3	30-40	bead, disc, incised	olivella	0	0	0	0	burnt	41
1524-2582	09S15E F5	40-48	bead, disc	olivella	1	0.01	0	0		24
1524-2592	09S15E F2	30-40	bead, disc	olivella	5	0.1	0	0	burned	67
1524-2593	09S15E F2	30-40	bead, disc	olivella	1	0.01	0	0	burned	67
1524-2809	09S14E F9	30-40	bead, disc	olivella	2	0.09	0	0		21
1524-2811	09S14E F9	30-40	bead, tube	mytilus	7	0.09	0	0		21
1524-2812	09S14E F9	30-40	bead, disc	norissia	1	0.02	0	0		21
1524-2880	09S17E F1	20-30	bead, disc	norissia	1	0.1	0	0		1
1524-2891	09S17E F2	20-30	bead, disc wall	olivella	1	0.04	0	0		31
1524-2918	11S15E	40-50	necklace, bead, disc	olivella	116	2.92	0	0	with asphaltum	44
1524-2919	11S15E F6	40-50	bead, disc	olivella	90	2.08	0	0	w/ asphaltum-associated	44
1524-2920	11S15E F6	40-50	bead, cup	olivella	1	0.03	0	0	associated w/ necklace	44
1524-2921	11S15E F6	40-50	bead, disc	norissia	9	0.22	0	0		44
1524-2922	11S15E F6	40-50	bead, cupped wall	olivella	13	0.39	0	0		44
1524-2923	11S15E F6	40-50	bead, disc	olivella	328	7.78	0	0		44
1524-2932	11S15E F1	20-30	bead, disc	olivella	1	0.32	0	0	w/ asphaltum from hal. bowl	39
1524-2952	09S17E F1	30-40	bead, disc	norissia	1	0.03	0	0		1
1524-2972	09S17E F5	30-40	bead, disc wall	olivella	1	0.08	0	0		34
1524-3050	09S15E F1	20-30	bead, cupped callus	olivella	1	0.04	0	0		22
1524-3051	09S15E F1	20-30	bead, disc	olivella	1	0.05	0	0		22
1524-3052	09S15E F1	40-50	bead, cupped callus	olivella	1	0.04	0	0		22
1524-3053	09S15E F1	30-40	bead, disc	norissia	2	0.04	0	0		22
1524-3054	09S15E F1	30-40	bead, disc	olivella	16	0.34	0	0		22
1524-3055	09S15E F1	30-40	bead, cupped callus	olivella	6	0.14	0	0		22
1524-3056	09S15E F1	30-40	bead, cupped callus	olivella	65	1.16	0	0		22
1524-3057	09S15E F1	30-40	bead, cupped callus	olivella	10	0.16	0	0		22
1524-3058	09S15E F1	30-40	bead, disc	norissia	12	0.31	0	0		22
1524-3059	09S15E F1	30-40	bead, cupped callus	olivella	7	0.13	0	0		22
1524-3060	09S15E F1	30-40	bead, cupped callus	olivella	5	0.14	0	0	burned	22
1524-3061	09S15E F1	30-40	bead, disc	olivella	1	0.03	0	0	burned	22

AC	Unit	Level	Artifact	Material	No	Weight	Length	Width	Comment	Feature
1524-3062	09S15E F1	30-40	bead, cupped wall	olivella	2	0.05	0	0		22
1524-3063	09S15E F1	30-40	bead, cupped wall	olivella	2	0.01	0	0	burned	22
1524-3064	09S15E F1	30-40	bead, disc	olivella	2	0.06	0	0		22
1524-3065	09S15E F1	30-40	bead, spire lopped	olivella	29	3.12	0	0		22
1524-3066	09S15E F1	30-40	bead, cupped wall	olivella	38	1.2	0	0	burned	22
1524-3085	09S15E F6	20-30	bead, cupped callus	olivella	1	0.02	0	0		25
1524-3091	09S15E F3	40-50	bead, disc	olivella	3	0	0.01	0		23
1524-3095	09S15E F3	40-50	bead, cupped callus	olivella	9	0.29	0	0	assoc w/ bird burial	23
1524-3096	09S15E F3	40-50	bead, disc	norissia	53	1.75	0	0	assoc w/ bird burial	23
1524-3097	09S15E F3	40-50	bead, disc	olivella	396	9.32	0	0	assoc w/ bird burial	23
1524-3184	09S18E F3	20-30	bead, cupped	olivella	13	1.04	0	0		37
1524-3185	09S18E F3	20-30	bead, cupped wall	olivella	9	0.74	0	0	charred	37
1524-3186	09S18E F3	20-30	bead, cupped callus	olivella	1	0.44	0	0		37
1524-3187	09S18E F3	20-30	bead, disc	olivella	16	0.81	0	0	charred	37
1524-3188	09S18E F3	20-30	bead, disc	olivella	84	1.09	0	0	charred	37
1524-3189	09S18E F3	20-30	bead, disc	olivella	29	1.23	0	0		37
1524-3212	21S00E B2	30-40	bead, disc	mytilus	1	0.03	0	0		73
1524-3213	21S00E B2	30-40	bead, cupped callus	conus	1	0.09	0	0		73
1524-3247	09S18E F2	20-30	bead, cupped	olivella	2	0.06	0	0		36
1524-3292	09S18E F2	30-40	bead, cupped callus	olivella	1	0.04	0	0		36
1524-3324	09S15E F8	40-50	bead, cupped callus	olivella	1	0.06	0	0		26
1524-3326	09S15E F8	40-50	bead, cupped callus	conus	1	0.13	0	0		26
1524-3328	09S15E F8	40-50	bead, cupped wall	olivella	2	0.05	0	0		26
1524-3360	09S15E	40-50	bead, cupped callus	olivella	2	0.04	0	0		23
1524-3361	09S15E	40-50	bead, cupped wall	olivella	5	0.12	0	0		23
1524-3362	09S15E	40-50	bead, disc	norissia	3	0.09	0	0		23
1524-3375	09S15E F3	40-50	bead, disc	haliotis	1	0.02	0	0		23

Table 16: Lemon Tank (CA-SCLI-1524) 1989 Excavation Site Records: Beads in Features

AC	Unit	Level	Feature	Artifact	Material	Quantity	Weight	Length	Width	Modifications	Comment
1524-00310	8S/17E	20-35	107	bead, undiff.	shell, undiff.	1	0.03	0	0		
1524-00333	8S/17E		104	bead, undiff.	shell, undiff.	3	0.61	0	0		
1524-00350	07S/16E	30-40	111	bead, undiff.	shell, undiff.	3	0.02	0	0		
1524-00371	13S/14E		98	bead, undiff.	shell, undiff.	1	0.02	0	0		
1524-00465	8S/16E	11-38	100	bead, undiff.	shell, undiff.	1	0.01	0	0		
1524-00604	11S/14E	20-30	102	bead, undiff.	shell, undiff.	2	0.02	0	0		
1524-00676	10S/15E	27-36	118	bead, undiff.	shell, undiff.	9	0	0	0		one with asphaltum
1524-00713	8S/17E	20-30	32	asphaltum	asphaltum	0	5.05	0	0		asphaltum plug fo
1524-00864	10S/17E		129	bead debitage	misc. non-subsistence	3	0.23	0	0		
1524-00897	10S/16E	20-30	27	bead debitage	undiff.	23	1.1	0	0		
1524-00898	10S/16E		27	bead debitage	undiff.	10	0.5	0	0		
1524-00899	10S/16E	0-10	27	bead debitage	undiff.	1	0.05	0	0		
1524-00926	NWQTR		126	bead, undiff.	olivella sp.	3	0.31	0	0	drilled	
1524-00999	7S/17E	20-39	131	bead, spire lopped	olivella sp.	2	0.19	0	0		
1524-01023	7S/17E	30-53	137	bead, undiff.	shell, undiff.	210	5.46	0	0		
1524-01077	10.5S/1	20-38	139	bead, undiff.	shell, undiff.	11	0	0	0		
1524-01122	10S/16E	30-40	134	bead, undiff.	misc. non-subsistence	22	0.59	0	0		
1524-01284	10S/17E	10-45	121	bead, glass	glass, undiff.	1	0.1				
1524-01285	10S/17E	10-45	121	bone	fish bone	1	0.1				
1524-01286	10S/17E	10-45	121	bead, undiff.	shell, undiff.	3	3.1				
1524-01512			41	bead, undiff.	volcanic, undiff.	1	0	12.2	9.47		
1524-01513			41	bead, undiff.	undiff.	248	33.4	0	0		
1524-01531	13S/19E	20-54	138	bead, undiff.	shell, undiff.	1	0	0	0		
1524-01575	10S/17E	10-20	121	bead, undiff.	shell, undiff.	9	3.4	0	0		

Table 17: Lemon Tank SCLI-1524 1988 Excavation: Bead Measurements

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-0737	49	1	1.1	bi-conical	ground	G1 or K2	
1524-0737	49	2	1.4	bi-conical	ground	G1i or K2i	incised, asphaltum
1524-0737	49	3	1.3	bi-conical	ground	G1 or K2	
1524-0737	49	4	1.3	bi-conical	ground	K2	
1524-0737	49	5	1.3	bi-conical	ground	K2	
1524-0737	49	6	1.7	bi-conical	ground	G1 or K2	burned
1524-0737	49	7	1.2	bi-conical	ground	K2	
1524-0737	49	8	1.2	bi-conical	ground	K2i	incised, asphaltum
1524-0737	49	9	1.5	bi-conical	ground	G1 or K2	
1524-0737	49	10	1.4	bi-conical	ground	G1 or K2	asphaltum
1524-0737	49	11	1.2	bi-conical	ground	G1 or K2	
1524-0737	49	12	1.2	bi-conical	ground	G1 or K2	
1524-0737	49	13	1.2	bi-conical	ground	G1 or K2	
1524-0737	49	14	1.3	bi-conical	ground	G1 or K2	asphaltum
1524-0737	49	15	1.3	bi-conical	ground	G1 or K2	
1524-0737	49	16	1.5	bi-conical	ground	G1 or K2	
1524-0737	49	17	1	bi-conical	ground	G1 or K2	
1524-0737	49	18	1	bi-conical	ground	G1 or K2	
1524-0737	49	19	1.4	bi-conical	ground	G1 or K2	
1524-0737	49	20	1.4	bi-conical	ground	G1 or K2	
1524-0738	49	1	1	bi-conical	ground	G1 or G2a	
1524-0742	49	1	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	2	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	3	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	4	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	5	0.9	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	6	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-0742	49	7	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	8	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	9	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	10	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	11	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	12	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	13	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0742	49	14					broken, not measured
1524-0753	48	1	1.2	bi-conical	ground	G1	
1524-0753	48	2	1.2	bi-conical	ground	G1	
1524-0753	48	3	1.3	bi-conical	ground	G1	
1524-0753	48	4	1.4	bi-conical	ground	G1	
1524-0753	48	5	1.2	bi-conical	ground	G1	
1524-0753	48	6	1.5	bi-conical	ground	G1	
1524-0753	48	7	1.3	bi-conical	ground	G1	
1524-0753	48	8	1.3	bi-conical	ground	G1	
1524-0753	48	9	1	bi-conical	ground		not *Olivella*
1524-0753	48	10	1.3	bi-conical	ground	G1	
1524-0753	48	11	1.4	ventral cone	ground	G1	
1524-0753	48	12	1	bi-conical	ground	G1	
1524-0753	48	13	1.5	bi-conical	ground	G1	
1524-0753	48	14	1.2	bi-conical	ground	G1	ochre?
1524-0753	48	15	1.4	bi-conical	ground	G1	
1524-0753	48	16	1.3	bi-conical	ground	G1	ochre?
1524-0753	48	17	1.2	bi-conical	ground	G1	ochre?
1524-0753	48	18	1.4	bi-conical	ground	G1	
1524-0753	48	19	1.3	ventral cone	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-0753	48	20	1.3	bi-conical	ground		not *Olivella*
1524-0753	48	21	1.3	bi-conical	ground	G1	
1524-0753	48	22	1.4	bi-conical	ground	G1	
1524-0753	48	23	1.5	bi-conical	ground	G1	ochre?
1524-0753	48	24	1.3	bi-conical	ground	G1	ochre?
1524-0753	48	25	1.5	bi-conical	ground	G1	
1524-0753	48	26	1.2	bi-conical	ground		not *Olivella*
1524-0753	48	27	1.3	bi-conical	ground	G1	
1524-0753	48	28	1.7	bi-conical	ground	G1	
1524-0753	48	29	1.4	bi-conical	ground	G1	ochre?
1524-0753	48	30	1.2	bi-conical	ground	G1	
1524-0753	48	31	1.4	bi-conical	ground	G1	
1524-0753	48	32	1.3	ventral cone	ground	G1	ochre?
1524-0753	48	33	1.3	bi-conical	ground	G1	
1524-0753	48	34	1.2	bi-conical	ground	G1	ochre?
1524-0753	48	35	1.4	bi-conical	ground	G1	
1524-0753	48	36	1.2	bi-conical	ground	G1	
1524-0753	48	37	1.1	bi-conical	ground	G1	
1524-0753	48	38	1.4	bi-conical	ground	G1	ochre?
1524-0753	48	39	1.1	bi-conical	ground	G1	
1524-0753	48	40	1.3	bi-conical	ground	G1	
1524-0753	48	41	1.3	bi-conical	ground	G1	
1524-0753	48	42	1.3	bi-conical	ground	G1	ochre?
1524-0753	48	43	1.2	bi-conical	ground	G1	
1524-0753	48	44	1.3	bi-conical	ground	G1	
1524-0753	48	45	1.5	bi-conical	ground	G1	ochre?
1524-0753	48	46	1.5	bi-conical	ground	G1	ochre?

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-0753	48	47	1.7	ventral cone	ground	G1	
1524-0753	48	48	1.3	bi-conical	ground	G1	
1524-0753	48	49	1.1	ventral cone	ground	G1	
1524-0753	48	50	1.2	bi-conical	ground	G1	
1524-0753	48	51	1.2	bi-conical	ground	G1	
1524-0754	48	1	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0754	48	2	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0754	48	3	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0754	48	4	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0754	48	5	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0754	48	6	1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0754	48	7	1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0754	48	8	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0754	48	9	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0754	48	10	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-0755	48	1	1.2	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	2	1.2	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	3	1.3	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	4	1.1	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	5	1.2	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	6	1.4	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	7	1.1	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	8	1.4	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	9	1.1	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	10	1	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	11	1	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)
1524-0755	48	12	1.1	bi-conical	ground		not *Olivella*? (identified as *Olivella* in Site Records)

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-0799	51	1	1.4	bi-conical	ground	G1	
1524-0799	51	2	1.6	bi-conical	ground	G1	
1524-1419	90	1	1.1	bi-conical	partially ground	G1, H1b, or H2	overall shape suggests possible H1b or H2
1524-1420	90	1	1.7	bi-conical	ground	G1 or K2	faces ground, ventral and dorsal faces difficult to distinguish
1524-1420	90	2	1	bi-conical	ground	G1 or K2	faces ground, ventral and dorsal faces difficult to distinguish, burned
1524-1420	90	3					broken, not measured
1524-1430	90	1	1.3	bi-conical	ground	G1 or K2	burned
1524-1430	90	2	1.6	bi-conical	ground	G1 or K2	burned
1524-1430	90	3	1.4	ventral cone	ground	G1 or K2	burned
1524-1430	90	4	1.5	bi-conical	ground	G1 or K2	burned
1524-1430	90	5	1.3	bi-conical	ground	G1 or K2	burned
1524-1430	90	6					broken, not measured; burned
1524-1431	90	1	1.3	bi-conical	ground	G1i	incised, asphaltum
1524-1431	90	2	1.2	bi-conical	ground	G1i	incised, asphaltum
1524-1432	90	1					broken, not measured; burned
1524-1713	47	1	1	cylindrical	partially ground	H1b	
1524-1713	47	2					broken, not measured; burned
1524-1713	47	3					broken, not measured; burned
1524-1722	43	1	1	cylindrical	partially ground	H1b	burned
1524-1722	43	2	1.1	cylindrical	partially ground	H1b	burned
1524-1722	43	3	1.1	cylindrical	partially ground	H1b	burned

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-1722	43	4	1	cylindrical	partially ground	H1b	burned
1524-1722	43	5	1	cylindrical	partially ground	H1b	burned
1524-1722	43	6	1	cylindrical	partially ground	H1b	burned
1524-1722	43	7	0.9	cylindrical	partially ground	H1b	burned
1524-1722	43	8	1	cylindrical	partially ground	H1b	burned
1524-1722	43	9	0.9	cylindrical	partially ground	H1b	burned
1524-1722	43	10	1.1	cylindrical	partially ground	H1b	burned
1524-1722	43	11	0.9	cylindrical	partially ground	H1b	burned
1524-1722	43	12	1.1	cylindrical	partially ground	H1b	burned
1524-1722	43	13	0.9	cylindrical	partially ground	H1b	burned
1524-1722	43	14	1	cylindrical	partially ground	H1b	burned
1524-1722	43	15	1	cylindrical	partially ground	H1b	burned
1524-1722	43	16	0.9	cylindrical	partially ground	H1b	burned
1524-1722	43	17					broken, not measured; burned
1524-1722	43	18					broken, not measured; burned
1524-1722	43	19					broken, not measured; burned
1524-1722	43	20					broken, not measured; burned

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-1722	43	21					broken, not measured; burned
1524-1722	43	22					broken, not measured; burned
1524-1722	43	23					broken, not measured; burned
1524-1722	43	24					broken, not measured; burned
1524-1722	43	25					broken, not measured
1524-1728	43	1	1.2	cylindrical	partially ground	H1b	burned
1524-1728	43	2	1.1	cylindrical	partially ground	H1b	burned
1524-1728	43	3	1.2	cylindrical	partially ground	H1b	burned
1524-1728	43	4	1.3	cylindrical	partially ground	H1b	burned
1524-1728	43	5	0.8	cylindrical	partially ground	H1b	burned
1524-1728	43	6	1	cylindrical	partially ground	H1b	burned
1524-1728	43	7	1.1	cylindrical	partially ground	H1b	burned
1524-1728	43	8	1.1	cylindrical	partially ground	H1b	burned
1524-1728	43	9	1.1	cylindrical	partially ground	H1b	burned
1524-1728	43	10	1	cylindrical	partially ground	H1b	burned
1524-1728	43	11	0.5	clogged, difficult to clean and determine	ground	H1b?	burned

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-1728	43	12	1	cylindrical	partially ground	H1b	burned
1524-1728	43	13	1	cylindrical	partially ground	H1b	burned
1524-1728	43	14	1	cylindrical	partially ground	H1b	burned
1524-1728	43	15	0.9	cylindrical	partially ground	H1b	burned
1524-1728	43	16	0.9	cylindrical	partially ground	H1b	burned
1524-1728	43	17	1	cylindrical	partially ground	H1b	burned
1524-1728	43	18	1.2	cylindrical	partially ground	H1b	burned
1524-1728	43	19	1.1	cylindrical	partially ground	H1b	burned
1524-1728	43	20	1.1	cylindrical	partially ground	H1b	burned
1524-1743	4	1	1.3	bi-conical	ground	G1	
1524-1743	4	2	1.2	ventral cone	ground	G1	
1524-1743	4	3	1.2	bi-conical	ground	G1	
1524-1743	4	4	1.3	bi-conical	ground	G1	
1524-1743	4	5	1	bi-conical	ground	G1	
1524-1809	3	1	1.2	ventral cone	ground	K2	
1524-1810	3	1	1.4	bi-conical	ground	G1i or K2i	incised
1524-1811	4	1	1.3	bi-conical	ground	G1	
1524-1811	4	2	1.1	bi-conical	ground	G1	
1524-1814	4	1	1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-1814	4	2	1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-1886	4	1	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-1886	4	2	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-1886	4	3	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-1886	4	4	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-1886	4	5	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-1886	4	6	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-1887	4	1	1.5	bi-conical	ground	K2	burned
1524-1887	4	2	1.3	bi-conical	ground	K2 or G1	burned
1524-1887	4	3	2.1	ventral cone	ground	K1 or K2	
1524-1887	4	4	1.4	bi-conical	ground	K2	burned
1524-1887	4	5	1.4	bi-conical	ground	K2	burned
1524-1887	4	6	1.6	bi-conical	ground	K2 or G1	burned
1524-1887	4	7	1.3	ventral cone	ground	K2	burned
1524-1887	4	8	1.5	bi-conical	ground	K2	burned
1524-1887	4	9	1.3	bi-conical	ground	K2 or G1	burned
1524-1887	4	10	1.4	bi-conical	ground	K2 or G1	burned
1524-1887	4	11	1.3	ventral cone	ground	K2 or G1	burned
1524-1887	4	12	1.4	bi-conical	ground	K2 or G1	burned
1524-1887	4	13	1.4	bi-conical	ground	K2 or G1	burned
1524-1887	4	14	1.5	bi-conical	ground	K2	burned
1524-1887	4	15	1.3	bi-conical	ground	K2	thickness ranges from 0.9-1.7, burned
1524-1887	4	16	1.5	ventral cone	ground	K2 or G1	burned
1524-1887	4	17	1.4	bi-conical	ground	K3 or G1	
1524-1887	4	18	1.4	bi-conical	ground	K2 or G1	thickness ranges from 0.7-1.5

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-1887	4	19	1.2	bi-conical	ground	K2 or G1	thickness ranges from 0.8-1.7, burned
1524-1887	4	20	1.8	bi-conical	ground	K2	
1524-1888	4	1	1.5	ventral cone	ground	G1	burned
1524-1888	4	2	1.5	bi-conical	ground	G1	burned
1524-1888	4	3	1.3	bi-conical	ground	K2 or G1	burned
1524-1888	4	4	1.4	bi-conical	ground	G1	burned
1524-1888	4	5	1.5	bi-conical	ground	G1	burned
1524-1888	4	6	1.2	bi-conical	ground	G1	
1524-1888	4	7	1.2	bi-conical	ground	G1	
1524-1888	4	8	1.3	bi-conical	ground	G1	
1524-1888	4	9	1.4	bi-conical	ground	G1	burned
1524-1888	4	10	1.6	bi-conical	ground	G1	burned
1524-1888	4	11	1.4	bi-conical	ground	G1	burned
1524-1888	4	12	1.3	bi-conical	ground	E1 or G1	thickness ranges from 1.0-1.5
1524-1888	4	13	1.2	bi-conical	ground	G1	burned
1524-1888	4	14	1.6	bi-conical	ground	G1	burned
1524-1888	4	15	1.5	bi-conical	ground	E1, K2, or G1	thickness ranges from 1.2-1.7, burned
1524-1888	4	16	1.5	bi-conical	ground	G1	burned
1524-1888	4	17	1.3	bi-conical	ground	G1	burned
1524-1888	4	18	1.3	bi-conical	ground	G1	burned
1524-1888	4	19	1.5	bi-conical	ground	G1	burned
1524-1888	4	20	1.4	bi-conical	ground	G1	
1524-1953	3	1	1	cylindrical	chipped, partially ground	H2	
1524-2357	30	1	1	unclear	unclear	G1	severely pockmarked
1524-2357	30	2	1	unclear	unclear	G1	severely pockmarked

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-2357	30	3	0.5	unclear	unclear	G1	severely pockmarked
1524-2357	30	4					stuck to other beads, not measured
1524-2357	30	5					stuck to other beads, not measured
1524-2357	30	6					stuck to other beads, not measured
1524-2357	30	7					stuck to other beads, not measured
1524-2357	30	8					stuck to other beads, not measured
1524-2357	30	9					stuck to other beads, not measured
1524-2357	30	10					stuck to other beads, not measured
1524-2357	30	11					stuck to other beads, not measured
1524-2357	30	12					stuck to other beads, not measured
1524-2357	30	13					stuck to other beads, not measured
1524-2357	30	14					stuck to other beads, not measured
1524-2357	30	15					stuck to other beads, not measured
1524-2357	30	16					stuck to other beads, not measured
1524-2357	30	17					stuck to other beads, not measured
1524-2359	30	1	1.2	cylindrical	partially ground	H1b	burned
1524-2370	30	1	1	bi-conical	ground	G1	
1524-2400	39	1	1	bi-conical	ground		not *Olivella* (identified as *Haliotis* in Site Records)
1524-2401	39	1	1	cylindrical	chipped, partially ground	H2	
1524-2417	41	1	1.3	ventral cone	ground	G1	
1524-2421	41	1	1.3	bi-conical	ground	G1i	burned, incised
1524-2582	24	1	1.6	ventral cone	ground	G1	ochre (crumbling)
1524-2592	67	1	1.2	bi-conical	ground	G1	possibly burned
1524-2592	67	2					broken, not measured; burned

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-2592	67	3					broken, not measured; burned
1524-2592	67	4					broken, not measured; burned
1524-2592	67	5					broken, not measured; burned
1524-2593	67	1	1.4	bi-conical	ground	G1i	incised, burned
1524-2809	21	1	0.9	bi-conical	ground		shell type unclear, no curvature
1524-2809	21	2	1.2	bi-conical	ground		shell type unclear, no curvature
1524-2811	21	1	0.9	cylindrical	ground		not *Olivella* (identified as *Mytilus* in Site Records)
1524-2811	21	2	0.9	cylindrical	ground		not *Olivella* (identified as *Mytilus* in Site Records)
1524-2811	21	3	1	cylindrical	ground		not *Olivella* (identified as *Mytilus* in Site Records)
1524-2811	21	4	0.8	cylindrical	ground		not *Olivella* (identified as *Mytilus* in Site Records)
1524-2811	21	5	0.9	cylindrical	ground		not *Olivella* (identified as *Mytilus* in Site Records)
1524-2811	21	6	1	cylindrical	ground		not *Olivella* (identified as *Mytilus* in Site Records)
1524-2811	21	7	0.9	cylindrical	ground		not *Olivella* (identified as *Mytilus* in Site Records)
1524-2811	21	8					broken, not measured
1524-2812	21	1	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-2880	27	1	0.6	bi-conical	ground		two holes drilled, used minimum diameter of smaller hole; not *Olivella* (identified as *Norissia* in Site Records)
1524-2891	31	1	1	cylindrical	chipped, partially ground	H2	
1524-2918	44	1	1.4	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	2	1.4	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-2918	44	3	1.2	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	4	1.2	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	5	1.4	bi-conical	ground	G1i	bead appears broken, asphaltum, incised
1524-2918	44	6	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2918	44	7	1.2	bi-conical	ground	G1i	asphaltum, incised
1524-2918	44	8	1.3	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	9	1.5	bi-conical	ground	G1i	asphaltum, incised
1524-2918	44	10	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2918	44	11	1.2	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	12	1.5	bi-conical	ground	G1i	asphaltum, incised
1524-2918	44	13	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2918	44	14	1.1	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	15	1.5	bi-conical	ground	G1i	asphaltum, incised
1524-2918	44	16	1.5	bi-conical	ground	G1i	asphaltum, incised

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-2918	44	17	1.3	ventral cone	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	18	1.4	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	19	1.5	bi-conical	ground	G1i	asphaltum, incised
1524-2918	44	20	1.3	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	21	1.2	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2918	44	22	1.2	bi-conical	ground	G1i	asphaltum, incised
1524-2918	44	23	1.3	ventral cone	ground	G1i	asphaltum, incised
1524-2918	44	24	1.2	bi-conical	ground	2 G1i beads glued together	asphaltum, incised; appears to be two beads glued together
1524-2919	44	1	1.2	ventral cone	ground	G1i	asphaltum, incised
1524-2919	44	2	1.4	ventral cone	ground	?	thickness ranges from 0.9-1.9, asphaltum, incised
1524-2919	44	3	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	4	1.3	bi-conical	ground	G1i	asphaltum, incised

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-2919	44	5	1.3	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	6	1.3	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	7	1.3	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	8	1.2	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	9	1.2	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	10	1.5	ventral cone	ground	G1i	bead appears broken, asphaltum, incised
1524-2919	44	11	1.3	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	12	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	13	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	14	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	15	1.3	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	16	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	17	1.3	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	18	1.2	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	19	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2919	44	20	1.4	bi-conical	ground	G1i	asphaltum, incised
1524-2920	44	1	1.4	bi-conical	ground	G1	
1524-2921	44	1	1.4	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-2921	44	2	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-2921	44	3	1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-2921	44	4	1.4	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-2921	44	5	1.4	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records), bead appears broken
1524-2921	44	6	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records), bead appears broken
1524-2921	44	7	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-2921	44	8	1.4	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-2921	44	9	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-2922	44	1	1.3	bi-conical	ground	G1	asphaltum?
1524-2922	44	2	1.5	ventral cone	ground	G1	asphaltum?
1524-2922	44	3	1.3	bi-conical	ground	G1	asphaltum?
1524-2922	44	4	1.2	ventral cone	ground	G1	asphaltum?
1524-2922	44	5	1.2	bi-conical	ground	G1	asphaltum?
1524-2922	44	6	1.3	bi-conical	ground	G1	asphaltum?
1524-2922	44	7	1.3	ventral cone	ground	G1	asphaltum?
1524-2922	44	8	1.6	bi-conical	ground	G1	asphaltum?
1524-2922	44	9	1.5	bi-conical	ground	G1	asphaltum?
1524-2922	44	10	1.3	ventral cone	ground	G1	asphaltum?
1524-2922	44	11	1.3	ventral cone	ground	G1	asphaltum?
1524-2922	44	12	1.3	bi-conical	ground	G1	asphaltum?
1524-2922	44	13	1.2	bi-conical	ground	G1	asphaltum?
1524-2923	44	1	1.4	bi-conical	ground	G1	
1524-2923	44	2	1.4	bi-conical	ground	G1i	incised
1524-2923	44	3	1.2	bi-conical	ground	G1	
1524-2923	44	4	1.3	bi-conical	ground	G1i	incised
1524-2923	44	5	1.2	bi-conical	ground	G1	
1524-2923	44	6	1.4	bi-conical	ground	G1	
1524-2923	44	7	1.3	bi-conical	ground	G1	
1524-2923	44	8	1.1	bi-conical	ground	G1i	incised
1524-2923	44	9	1.2	bi-conical	ground	G1	
1524-2923	44	10	1.2	ventral cone	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-2923	44	11	1.4	ventral cone	ground	G1	
1524-2923	44	12	1.6	bi-conical	ground	G1	
1524-2923	44	13	1.3	bi-conical	ground	G1	
1524-2923	44	14	1.4	ventral cone	ground	G1	
1524-2923	44	15	1.4	ventral cone	ground	G1i	bead appears broken, incised
1524-2923	44	16	1.4	bi-conical	ground	G1	
1524-2923	44	17	1.2	bi-conical	ground	G1	
1524-2923	44	18	1.2	ventral cone	ground	G1	
1524-2923	44	19	1.4	bi-conical	ground	G1i	incised
1524-2923	44	20	1.5	ventral cone	ground	G1	
1524-2923	44	21	1.2	ventral cone	ground	G1i	incised
1524-2923	44	22	1.2	ventral cone	ground	G1	
1524-2923	44	23	1.4	bi-conical	ground	G1	
1524-2923	44	24	1.5	bi-conical	ground	G1	
1524-2923	44	25	1.1	bi-conical	ground	G1i	incised
1524-2923	44	26	1.5	ventral cone	ground	G1	
1524-2923	44	27	1.1	bi-conical	ground	G1	bead appears broken
1524-2923	44	28	1.4	bi-conical	ground	G1	
1524-2923	44	29	1.1	ventral cone	ground	G1i	incised
1524-2923	44	30	1.4	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-2923	44	31	1.3	bi-conical	ground	G1i	incised
1524-2923	44	32	1.2	ventral cone	ground	G1	bead appears broken
1524-2923	44	33	1.3	bi-conical	ground	G1	
1524-2923	44	34	1.2	ventral cone	ground	G1	
1524-2923	44	35	1.3	bi-conical	ground	G1	
1524-2923	44	36	1.4	ventral cone	ground	G1	
1524-2923	44	37	1.2	bi-conical	ground	G1	
1524-2923	44	38	1.4	bi-conical	ground	G1	
1524-2923	44	39	1.5	ventral cone	ground	G1	
1524-2923	44	40	1.2	bi-conical	ground	G1	
1524-2923	44	41	1.6	bi-conical	ground	G1	
1524-2923	44	42	1.3	bi-conical	ground	G1i	asphaltum, incised
1524-2923	44	43	1.3	ventral cone	ground	G1	
1524-2923	44	44	1.3	bi-conical	ground	G1i	incised
1524-2923	44	45	1.1	bi-conical	ground	G1	
1524-2923	44	46	1.4	bi-conical	ground	G1	
1524-2923	44	47	1.5	ventral cone	ground	G1	
1524-2923	44	48	1.3	bi-conical	ground	G1	
1524-2923	44	49	1.4	bi-conical	ground	G1	
1524-2923	44	50	1.3	bi-conical	ground	G1	asphaltum
1524-2923	44	51	1.2	ventral cone	ground	G1	
1524-2923	44	52	1.2	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-2923	44	53	1.3	bi-conical	ground	G1	
1524-2923	44	54	1.2	bi-conical	ground	G1	
1524-2923	44	55	1.5	ventral cone	ground	G1	
1524-2923	44	56	1.1	ventral cone	ground	G1	
1524-2923	44	57	1.3	ventral cone	ground	G1	
1524-2923	44	58	1.3	bi-conical	ground	G1	
1524-2923	44	59	1.1	ventral cone	ground	G1	
1524-2923	44	60	1.3	ventral cone	ground	G1	
1524-2923	44	61	1.3	ventral cone	ground	G1	asphaltum
1524-2923	44	62	1.2	bi-conical	ground	G1	
1524-2923	44	63	1.5	bi-conical	ground	G1	
1524-2923	44	64	1.4	bi-conical	ground	G1	
1524-2923	44	65	1.3	bi-conical	ground	G1	
1524-2923	44	66	1.3	bi-conical	ground	G1	
1524-2932	39	1	1	cylindrical	chipped, partially ground	H2	perforation is off-centered, bead may be broken; asphaltum
1524-2952	27	1	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-2972	34	1	1	cylindrical	chipped	H2 or H3	
1524-3050	22	1	1.1	bi-conical	ground	G1	burned
1524-3050	22	2	1	cylindrical	ground	H1a	burned
1524-3050	22	3	1	cylindrical	ground	H1a	burned
1524-3050	22	4	1	cylindrical	ground	H1a	burned

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3050	22	5	1	bi-conical	ground	H1a/G1	burned
1524-3050	22	6	1	cylindrical	ground	H1a	bead appears broken, burned
1524-3050	22	7	1	bi-conical	ground	H1a/G1	burned
1524-3050	22	8	1	too much damage to determine	ground	H1a	bead appears broken, burned
1524-3050	22	9	1.2	bi-conical	partially ground	H1b	classification unclear considering context and possible damage to bead, burned
1524-3050	22	10	1	cylindrical	ground	H1a	burned
1524-3050	22	11	0.8	cylindrical	ground	H1a	bead appears broken, burned
1524-3050	22	12					broken, not measured; burned
1524-3050	22	13					broken, not measured; burned
1524-3050	22	14					broken, not measured; burned
1524-3050	22	15					broken, not measured; burned
1524-3051	22	1					broken, not measured
1524-3052	22	1	1.6	bi-conical	ground	G1i	incised, asphaltum?
1524-3053	22	1	1.4	conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3053	22	2	1.4	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3054	22	1	1.2	bi-conical	ground	G1	
1524-3054	22	2	1.2	bi-conical	ground	G1	
1524-3054	22	3	1.2	bi-conical	ground	G1	
1524-3054	22	4	1.2	bi-conical	ground	G1	ochre?
1524-3054	22	5	1.2	bi-conical	ground	G1	
1524-3054	22	6	1.4	bi-conical	ground	G1	
1524-3054	22	7	1.5	ventral cone	ground	G1	
1524-3054	22	8	1.4	bi-conical	ground	G1	
1524-3054	22	9	1.2	bi-conical	ground	G1	
1524-3054	22	10	1.4	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3054	22	11	1.5	uni-conical	ground	G1	
1524-3054	22	12	1.3	ventral cone	ground	G1	
1524-3054	22	13	1.3	bi-conical	ground	G1	
1524-3054	22	14	1.3	bi-conical	ground	G1	
1524-3054	22	15	1.2	ventral cone	ground	G1	ochre
1524-3054	22	16	1.7	bi-conical	ground	G1	
1524-3055	22	1	1.6	bi-conical	ground	G1i	incised
1524-3055	22	2	1.6	bi-conical	ground	G1i	incised
1524-3055	22	3	1.5	bi-conical	ground	G1i	incised, asphaltum
1524-3055	22	4	1.5	bi-conical	ground	G1i	incised
1524-3055	22	5	1.2	bi-conical	ground	G1i	incised
1524-3055	22	6	1.4	bi-conical	ground	G1i	incised
1524-3056	22	1	1.2	ventral cone	ground	G1	
1524-3056	22	2	1.4	bi-conical	ground	G1	
1524-3056	22	3	1.5	bi-conical	ground	G1	
1524-3056	22	4	1.4	bi-conical	ground	G1	
1524-3056	22	5	1.4	bi-conical	ground	G1	
1524-3056	22	6	1.4	ventral cone	ground	G1	
1524-3056	22	7	1.6	ventral cone	ground	G1	
1524-3056	22	8	1.6	bi-conical	ground	G1	
1524-3056	22	9	1.5	ventral cone	ground	G1	
1524-3056	22	10	1.4	bi-conical	ground	E1 or G1	thickness ranges from 0.5-1.7
1524-3056	22	11	1.5	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3056	22	12	1.4	bi-conical	ground	G1	
1524-3056	22	13	1.4	bi-conical	ground	G1	
1524-3056	22	14	1.7	ventral cone	ground	G1	
1524-3056	22	15	1.4	bi-conical	ground	G1	
1524-3056	22	16	1.3	bi-conical	ground	G1	
1524-3056	22	17	1.3	bi-conical	ground	G1	
1524-3056	22	18	1.3	ventral cone	ground	G1	
1524-3056	22	19	1.3	ventral cone	ground	G1	
1524-3056	22	20	1.2	bi-conical	ground	G1	
1524-3057	22	1	1.5	ventral cone	ground	G1	ochre and asphaltum
1524-3057	22	2	1.3	ventral cone	ground	G1	ochre and asphaltum, bead appears broken
1524-3057	22	3	1.3	bi-conical	ground	G1	ochre and asphaltum
1524-3057	22	4	1.3	bi-conical	ground	G1i	incised, ochre and asphaltum
1524-3057	22	5	1.7	bi-conical	ground	G1	ochre and asphaltum
1524-3057	22	6	1.3	ventral cone	ground	G1	ochre and asphaltum
1524-3057	22	7	1.6	bi-conical	ground	G1	ochre and asphaltum
1524-3057	22	8	1.3	bi-conical	ground	G1	ochre and asphaltum
1524-3057	22	9	1.2	bi-conical	ground	G1	ochre and asphaltum
1524-3057	22	10					broken, not measured; ochre and asphaltum
1524-3058	22	1	1.5	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3058	22	2	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3058	22	3	1.5	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3058	22	4	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3058	22	5	1.3	conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3058	22	6	1.4	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records), bead appears broken
1524-3058	22	7	1.4	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3058	22	8	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3058	22	9	1.5	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3058	22	10	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3058	22	11	1.3	bi-conical	ground		
1524-3058	22	12	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3059	22	1	1.5	bi-conical	ground	G1i	ochre, incised
1524-3059	22	2	1.9	bi-conical	ground	G1i	incised
1524-3059	22	3	1.4	bi-conical	ground	G1i	ochre, incised
1524-3059	22	4	1.3	ventral cone	ground	G1i	incised
1524-3059	22	5	1.4	bi-conical	ground	G1i	incised
1524-3059	22	6	1.3	bi-conical	ground	G1i	incised
1524-3059	22	7	1.4	bi-conical	ground	G1i	incised
1524-3060	22	1	1.6	ventral cone	ground	K1i	ochre and asphaltum, incised
1524-3060	22	2	1.6	bi-conical	ground	G1i	ochre, incised
1524-3060	22	3	1.5	ventral cone	ground	G1i	ochre and asphaltum, incised
1524-3060	22	4	1.4	ventral cone	ground	G1i	ochre and asphaltum, incised
1524-3060	22	5	1.4	bi-conical	ground	G1i	ochre and asphaltum, incised
1524-3061	22	1	1.5	bi-conical	ground	G1i	ochre and asphaltum, incised
1524-3062	22	1	1	cylindrical	ground	H1a	
1524-3062	22	2	1	cylindrical	ground	H1a	perforation is off-centered, bead may be broken
1524-3063	22	1	1	cylindrical	ground	H1ai	incised, burned

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3063	22	2	1.2	bi-conical	ground	G1i	incised, burned
1524-3064	22	1	1.3	bi-conical	ground	G1i	asphaltum, incised
1524-3064	22	2					broken, not measured; burned
1524-3065	22	1	1.2		ground	A1a	
1524-3065	22	2	1.3		ground	A1a	
1524-3065	22	3	1.2		ground	A1a	
1524-3065	22	4	0.8		ground	A1a	
1524-3065	22	5	1.1		ground	A1a	
1524-3065	22	6	1		ground	A1a	
1524-3065	22	7	1.2		ground	A1a	
1524-3065	22	8	1.1		ground	A1a	
1524-3065	22	9	1.2		ground	A1a	
1524-3065	22	10	1		ground	A1a	
1524-3065	22	11	1.1		ground	A1a	
1524-3065	22	12	1.1		ground	A1a	
1524-3065	22	13	1.3		ground	A1a	
1524-3065	22	14	1.2		ground	A1a	
1524-3065	22	15	1		ground	A1a	
1524-3065	22	16	1.2		ground	A1a	
1524-3065	22	17	1		ground	A1a	
1524-3065	22	18	1.1		ground	A1a	
1524-3065	22	19	1		ground	A1a	
1524-3065	22	20	1.1		ground	A1a	
1524-3065	22	21	1		ground	A1a	
1524-3065	22	22	1.4		ground	A1a	
1524-3065	22	23	1.1		ground	A1a	
1524-3065	22	24	1.4		ground	A1a	
1524-3065	22	25	1.4		ground	A1a	
1524-3065	22	26	1.1		ground	A1a	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3065	22	27	1		ground	A1a	
1524-3065	22	28	1.1		ground	A1a	
1524-3065	22	29	0.9		ground	A1a	
1524-3066	22	1	1	ventral cone	ground	H1b	burned
1524-3066	22	2	1	cylindrical	ground	H1a	burned
1524-3066	22	3	1.1	bi-conical	ground	H1a	bead appears broken, burned
1524-3066	22	4	1	bi-conical	ground	H1a	burned
1524-3066	22	5	1	cylindrical	ground	H1a	burned
1524-3066	22	6	1	cylindrical	ground	H1ai	incised, burned
1524-3066	22	7	1.3	bi-conical	ground	G1	burned
1524-3066	22	8	1	cylindrical	ground	H1a	burned
1524-3066	22	9	1.3	dorsal cone?	ground	G1	burned
1524-3066	22	10	1	cylindrical	ground	H1a	burned
1524-3066	22	11	1	cylindrical	ground	H1a	burned
1524-3066	22	12	1.3	bi-conical	ground	G1	burned
1524-3066	22	13	1	cylindrical	ground	H1a	burned
1524-3066	22	14	1.1	bi-conical	ground	G1	burned
1524-3066	22	15	1	cylindrical	ground	H1a	bead appears broken, burned
1524-3066	22	16	1	cylindrical	ground	H1a	burned
1524-3066	22	17	1	bi-conical	ground	G1	burned
1524-3066	22	18	1	bi-conical	ground	G1	burned
1524-3066	22	19	1.5	bi-conical	ground	G1	burned
1524-3066	22	20	1	cylindrical	ground	H1a	burned
1524-3085	25	1					broken, not measured
1524-3091	23	1	1	bi-conical	ground	G1	
1524-3091	23	2	1	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3095	23	1	1.3	bi-conical	ground	E1, K2, or G1	thickness ranges from 0.9-1.5
1524-3095	23	2	1.4	bi-conical	ground	E1, K2, or G1	thickness ranges from 1.2-1.9
1524-3095	23	3	1.2	ventral cone	ground	E1, K2, or G1	thickness ranges from 0.7-1.7
1524-3095	23	4	1.2	bi-conical	ground	E1, K2, or G1	thickness ranges from 0.8-1.5
1524-3095	23	5	1.5	bi-conical	ground	E1, K2, or G1	thickness ranges from 0.7-1.7
1524-3095	23	6	1.4	bi-conical	ground	E1, K2, or G1	thickness ranges from 0.8-1.8
1524-3095	23	7	1.2	bi-conical	ground	K2 or G1	symmetrical
1524-3095	23	8	1.4	bi-conical	ground	E1, K2, or G1	thickness ranges from 1.3-2.4
1524-3095	23	9	1.4	bi-conical	ground	E1, K2, or G1	thickness ranges from 0.7-1.3
1524-3096	23	1	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	2	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	3	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	4	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	5	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	6	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	7	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	8	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	9	1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	10	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	11	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	12	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3096	23	13	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	14	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	15	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	16	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	17	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	18	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	19	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3096	23	20	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3097	23	1	1.5	bi-conical	ground	G1	
1524-3097	23	2	1.4	bi-conical	ground	G1	
1524-3097	23	3	1.4	bi-conical	ground	G1	
1524-3097	23	4	1.4	bi-conical	ground	G1	asphaltum
1524-3097	23	5	1.4	bi-conical	ground	G1	
1524-3097	23	6	1.4	bi-conical	ground	G1	
1524-3097	23	7	1.3	bi-conical	ground	G1	
1524-3097	23	8	1.3	bi-conical	ground	G1	
1524-3097	23	9	1.5	bi-conical	ground	G1	
1524-3097	23	10	1.2	ventral cone	ground	G1	
1524-3097	23	11	1.2	bi-conical	ground	G1	
1524-3097	23	12	1.2	bi-conical	ground	G1	
1524-3097	23	13	1	ventral cone	ground	G1	
1524-3097	23	14	1.5	bi-conical	ground	G1	
1524-3097	23	15	1.2	ventral cone	ground	G1	
1524-3097	23	16	1.2	bi-conical	ground	G1	asphaltum
1524-3097	23	17	1.5	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3097	23	18	1.2	ventral cone	ground	G1	
1524-3097	23	19	1.3	bi-conical	ground	G1	
1524-3097	23	20	1.2	bi-conical	ground	G1	
1524-3097	23	21	1.4	bi-conical	ground	G1	asphaltum
1524-3097	23	22	1.3	bi-conical	ground	G1	
1524-3097	23	23	1.2	bi-conical	ground	G1	
1524-3097	23	24	1.3	bi-conical	ground	G1	
1524-3097	23	25	1.4	bi-conical	ground	G1	
1524-3097	23	26	1.4	bi-conical	ground	G1	
1524-3097	23	27	1.3	bi-conical	ground	G1	
1524-3097	23	28	1.3	bi-conical	ground	G1	
1524-3097	23	29	1.1	ventral cone	ground	G1	
1524-3097	23	30	1.1	bi-conical	ground	G1	asphaltum
1524-3097	23	31	1.2	bi-conical	ground	G1	
1524-3097	23	32	1.3	bi-conical	ground	G1	
1524-3097	23	33	1.4	bi-conical	ground	G1	
1524-3097	23	34	1.3	bi-conical	ground	G1	
1524-3097	23	35	1.3	bi-conical	ground	G1	
1524-3097	23	36	1.2	bi-conical	ground	G1	
1524-3097	23	37	1.3	bi-conical	ground	G1	
1524-3097	23	38	1.5	bi-conical	ground	G1	
1524-3097	23	39	1.3	bi-conical	ground	G1	
1524-3097	23	40	1.2	bi-conical	ground	G1	
1524-3097	23	41	1.1	bi-conical	ground	G1	
1524-3097	23	42	1.3	bi-conical	ground	G1	
1524-3097	23	43	1.2	bi-conical	ground	G1	
1524-3097	23	44	1	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3097	23	45	1.3	bi-conical	ground	G1i	incised
1524-3097	23	46	1.1	bi-conical	ground	G1	
1524-3097	23	47	1.4	ventral cone	ground	G1	
1524-3097	23	48	1.3	bi-conical	ground	G1	
1524-3097	23	49	1.2	bi-conical	ground	G1	
1524-3097	23	50	1.5	bi-conical	ground	G1	
1524-3097	23	51	1.2	bi-conical	ground	G1	
1524-3097	23	52	1.4	bi-conical	ground	G1	
1524-3097	23	53	1.3	bi-conical	ground	G1	
1524-3097	23	54	1.3	bi-conical	ground	G1	
1524-3097	23	55	1.5	bi-conical	ground	G1	asphaltum
1524-3097	23	56	1.1	bi-conical	ground	G1	
1524-3097	23	57	1.2	bi-conical	ground	G1	
1524-3097	23	58	1.1	bi-conical	ground	G1	
1524-3097	23	59	1.3	bi-conical	ground	G1	
1524-3097	23	60	1.3	bi-conical	ground	G1	
1524-3097	23	61	1.4	bi-conical	ground	E1, G1, or K2	thickness ranges from 0.9-1.6
1524-3097	23	62	1.4	bi-conical	ground	G1	
1524-3097	23	63	1.4	bi-conical	ground	G1	
1524-3097	23	64	1.1	bi-conical	ground	G1	
1524-3097	23	65	1.1	bi-conical	ground	G1	
1524-3097	23	66	1.3	ventral cone	ground	G1	
1524-3097	23	67	1.2	ventral cone	ground	G1	
1524-3097	23	68	1.4	bi-conical	ground	G1	
1524-3097	23	69	1.2	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3097	23	70	1.4	bi-conical	ground	E1, G1, or K2	thickness ranges from 0.6-1.7
1524-3097	23	71	1.4	bi-conical	ground	G1	
1524-3097	23	72	1.4	bi-conical	ground	G1	
1524-3097	23	73	1.2	bi-conical	ground	G1	
1524-3097	23	74	1.2	ventral cone	ground	G1	
1524-3097	23	75	1.3	ventral cone	ground	G1	
1524-3097	23	76	1.4	bi-conical	ground	G1	
1524-3097	23	77	1.3	bi-conical	ground	G1	
1524-3097	23	78	1.1	ventral cone	ground	G1	
1524-3097	23	79	1.4	bi-conical	ground	G1	
1524-3097	23	80	1.3	bi-conical	ground	G1	
1524-3184	37	1	1.4	bi-conical	ground	G2a	burned
1524-3184	37	2	1.4	bi-conical	ground	G1	burned
1524-3184	37	3	1	cylindrical	partially ground	H1b	
1524-3184	37	4	1	cylindrical	ground	H1a	burned
1524-3184	37	5	1.4	bi-conical	ground	G1	burned
1524-3184	37	6	1	cylindrical or bi-conical	ground	H1a or G1	burned
1524-3184	37	7	1	cylindrical	ground	H1a	
1524-3184	37	8	1.3	ventral cone	ground	G1	burned
1524-3184	37	9	1	cylindrical	partially ground	H1b	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3184	37	10					broken, not measured; burned
1524-3184	37	11					broken, not measured; burned
1524-3184	37	12					broken, not measured; burned
1524-3184	37	13					broken, not measured; burned
1524-3185	37	1	1	cylindrical	ground	H1a	burned
1524-3185	37	2	1	cylindrical or bi-conical	ground	H1a or G1	burned
1524-3185	37	3	1.5	bi-conical	ground	G1	burned
1524-3185	37	4	1.1	bi-conical	ground	G1	burned
1524-3185	37	5	1.1	bi-conical	ground	G1	burned
1524-3185	37	6	1	cylindrical	ground	H1a	burned
1524-3185	37	7					broken, not measured; burned
1524-3185	37	8					broken, not measured; burned
1524-3185	37	9					broken, not measured; burned
1524-3186	37	1					broken, not measured; burned
1524-3187	37	1	1.5	bi-conical	ground	G1i	incised, burned
1524-3187	37	2	1.6	bi-conical	ground	G1i	incised, burned
1524-3187	37	3	1.3	bi-conical	ground	G1i	incised, burned
1524-3187	37	4	1.5	bi-conical	ground	G1i	incised, burned
1524-3187	37	5	1.4	bi-conical	ground	G1i	incised, burned
1524-3187	37	6	1.5	bi-conical	ground	G1i	incised, burned
1524-3187	37	7	1.4	bi-conical	ground	G1i	incised, burned
1524-3187	37	8	1.5	bi-conical	ground	G1i	incised, burned
1524-3187	37	9	1.5	bi-conical	ground	G1i	incised, burned
1524-3187	37	10	1.7	bi-conical	ground	G1i	incised, burned
1524-3187	37	11	1.2	bi-conical	ground	G1i	incised, burned
1524-3187	37	12	1.3	bi-conical	ground	G1i	incised, burned
1524-3187	37	13	1.2	bi-conical	ground	G1i	incised, burned

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3187	37	14	1.2	bi-conical	ground	G1i	incised, burned
1524-3187	37	15					broken, not measured; burned
1524-3187	37	16					broken, not measured; burned
1524-3188	37	1	0.9	cylindrical	ground	H1a	burned
1524-3188	37	2	1.5	bi-conical	ground	G1	burned
1524-3188	37	3	1.7	ventral cone	ground	G1	burned
1524-3188	37	4	1.3	bi-conical	ground	G1	burned
1524-3188	37	5	1.3	bi-conical	ground	G1	burned
1524-3188	37	6	1.3	ventral cone	ground	G1	burned
1524-3188	37	7	1	bi-conical	ground	G1	burned
1524-3188	37	8	1.3	bi-conical	ground	G1	burned
1524-3188	37	9	1.5	bi-conical	ground	G1	burned
1524-3188	37	10	0.9	cylindrical	ground	H1a	burned
1524-3188	37	11	1.1	bi-conical	ground	G1	burned
1524-3188	37	12	0.9	cylindrical	ground	H1a	burned
1524-3188	37	13	1.3	bi-conical	ground	G1	burned
1524-3188	37	14	1.7	ventral cone	ground	G1	burned
1524-3188	37	15	1.4	bi-conical	ground	G1	burned
1524-3188	37	16	1.5	bi-conical	ground	G1	burned
1524-3188	37	17	0.7	cylindrical	ground	H1a	burned
1524-3188	37	18	1	cylindrical	ground	H1a	burned
1524-3188	37	19	1.5	bi-conical	ground	G1i	incised, burned
1524-3188	37	20	1.4	bi-conical	ground	G1	burned
1524-3189	37	1	1.2	bi-conical	ground	G1	
1524-3189	37	2	1.2	bi-conical	ground	G1	asphaltum
1524-3189	37	3	1.1	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3189	37	4	1.5	bi-conical	ground	G1i	incised, asphaltum
1524-3189	37	5	1.5	ventral cone	ground	G1	burned
1524-3189	37	6	0.9	cylindrical	ground	H1a	burned
1524-3189	37	7	1.1	bi-conical	ground	G1	
1524-3189	37	8	1.1	bi-conical	ground	G1	
1524-3189	37	9	1.2	bi-conical	ground	G1	asphaltum
1524-3189	37	10	1.1	bi-conical	ground	G1	
1524-3189	37	11	1.3	bi-conical	ground	G1i	incised
1524-3189	37	12	1.4	bi-conical	ground	G1	burned
1524-3189	37	13	0.9	cylindrical	ground	H1a	burned
1524-3189	37	14	1.5	bi-conical	ground	G1	
1524-3189	37	15	1.2	bi-conical	ground	G1	burned
1524-3189	37	16	1.4	bi-conical	ground	G1i	
1524-3189	37	17	1.4	bi-conical	ground	G1	asphaltum
1524-3189	37	18	1.3	bi-conical	ground	G1i	incised, asphaltum
1524-3189	37	19	1.4	bi-conical	ground	G1	ochre
1524-3189	37	20	1.3	bi-conical	ground	G1i	incised, asphaltum
1524-3247	36	1	1.4	bi-conical	ground	G1	
1524-3247	36	2	1.2	bi-conical	ground	G1	
1524-3292	36	1	1.1	bi-conical	ground	K2 or G1	calcined, ochre
1524-3324	26	1	1.4	bi-conical	ground	G1	
1524-3326	26	1	2.4	ventral cone	ground		not *Olivella* (identified as *Conus* in Site Records)
1524-3328	26	1	1.4	ventral cone	ground	G1	burned
1524-3328	26	2					broken, not measured; burned
1524-3360	23	1	1.3	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-3360	23	2	1	bi-conical	ground	E1, G1, or K2	thickness ranges from 0.7-1.6, asphaltum
1524-3361	23	1	1.2	bi-conical	ground	G1	
1524-3361	23	2	1.2	bi-conical	ground	G1	asphaltum
1524-3361	23	3	1.4	bi-conical	ground	G1	
1524-3361	23	4	1.8	bi-conical	ground	G1	asphaltum
1524-3361	23	5	1.5	bi-conical	ground	G1	
1524-3362	23	1	1.1	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3362	23	2	1.2	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3362	23	3	1.3	bi-conical	ground		not *Olivella* (identified as *Norissia* in Site Records)
1524-3375	23	1	1.4	bi-conical	ground		not *Olivella* (identified as *Haliotis* in Site Records)

Table 18: Lemon Tank SCLI-1524 1989 Excavation: Bead Measurements

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-00310	107	1	1.3	bi-conical	ground	G1	asphaltum
1524-00333	104	1	1.8		partially ground	A1a	
1524-00333	104	2	1.8	bi-conical	ground	E1a1, G1, or K3	thickness ranges from 0.9-2.2, bead is crumbly
1524-00333	104	3	1.7	bi-conical	ground	G1	
1524-00350	111	1	1.3	bi-conical	ground	K2	
1524-00350	111	2	1.2	bi-conical	ground	G1	
1524-00350	111	3	1.3	bi-conical	ground	K2 or G1	
1524-00371	98	1	1	cylindrical	partially ground	H1b	
1524-00465	100	1	1.5	bi-conical	ground	K2 or G1	burned
1524-00604	102	1	1.3	bi-conical	ground	K2 or G1	burned
1524-00604	102	2	1.3	bi-conical	ground	G1i	incised
1524-00676	118	1	1.3	bi-conical	ground	G1	burned
1524-00676	118	2	1.4	bi-conical	ground	G1	asphaltum
1524-00676	118	3	1.3	bi-conical	ground	G1	burned
1524-00676	118	4	1.3	bi-conical	ground	G1	asphaltum
1524-00676	118	5	1.5	bi-conical	ground	G1	burned
1524-00676	118	6	1.4	bi-conical	ground	G1	burned
1524-00676	118	7	1.3	ventral cone	ground	G1	burned
1524-00676	118	8	1.4	bi-conical	ground	G1i	incised, asphaltum
1524-00676	118	9					encrusted in asphaltum and charcoal, not measured
1524-00713	32	1	1.3	bi-conical	ground	G1	asphaltum
1524-00713	32	2	1.8	bi-conical	ground	G1	asphaltum
1524-00713	32	3	1.3	ventral cone	ground	G1	asphaltum

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-00713	32	4					stuck in asphaltum, not measured
1524-00713	32	5					stuck in asphaltum, not measured
1524-00713	32	6					stuck in asphaltum, not measured
1524-00713	32	7					stuck in asphaltum, not measured
1524-00713	32	8					stuck in asphaltum, not measured
1524-00713	32	9					stuck in asphaltum, not measured
1524-00864	129	1	0.8	cylindrical	ground	needle-drilled	not *Olivella*, needle-drilled
1524-00864	129	2	1.5	bi-conical	ground	G1	
1524-00864	129	3	1.3	bi-conical	ground	K2 or G1	
1524-00897	27	1	1	cylindrical	partially ground	H1b	
1524-00897	27	2	1	cylindrical	partially ground	H1b or H2	
1524-00897	27	3	1	cylindrical	partially ground	H1b	
1524-00897	27	4	1.3	bi-conical	ground	G1	
1524-00897	27	5	1.1	bi-conical	ground	G1	
1524-00897	27	6	1	cylindrical	partially ground	H1b	
1524-00897	27	7	0.9	cylindrical	partially ground	H1b or H2	
1524-00897	27	8	1.6	unclear	ground	G1	thickness ranges from 0.4-1.4, burned, problems with delamination during measurement
1524-00897	27	9	0.9	cylindrical	partially ground	H1b	
1524-00897	27	10	1.1	cylindrical or bi-conical	partially ground	H1b or G2a	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-00897	27	11	1.8	ventral cone	ground	G1	burned
1524-00897	27	12	0.9	cylindrical	partially ground	H1b	
1524-00897	27	13	1.3	bi-conical	ground	G1	
1524-00897	27	14	0.9	cylindrical	partially ground	H1b	
1524-00897	27	15	0.9	cylindrical	partially ground	H1b	
1524-00897	27	16	1.3	bi-conical	ground	G1	thickness ranges from 0.5-1.6, burned, problems with delamination during measurement
1524-00897	27	17	0.8	cylindrical	partially ground	H1b	
1524-00897	27	18	1.1	cylindrical	partially ground	H1b	
1524-00897	27	19	1.3	bi-conical	ground	G1	
1524-00897	27	20	1	cylindrical	partially ground	H1b	
1524-00897	27	21	1.2	bi-conical	ground	G1	
1524-00897	27	22	1.6	ventral cone	ground	G1	
1524-00897	27	23	1.8	bi-conical	ground	G2a	
1524-00897	27	24	1.1	cylindrical	partially ground	H1b	
1524-00898	27	1	1.3	bi-conical	ground	G1	
1524-00898	27	2	1.4	bi-conical	ground	G1	burned
1524-00898	27	3	1	bi-conical	partially ground	H1b or G2a	overall shape indicates Class H, but perforation is not cylindrical
1524-00898	27	4	1	cylindrical	partially ground	H1b	thickness ranges from 1.0-2.1

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-00898	27	5	1.6	bi-conical	ground	K2 or G1	thickness ranges from 0.7-1.6
1524-00898	27	6	1.1	bi-conical	ground	H1a or G2a	overall shape indicates Class H, but perforation is not cylindrical
1524-00898	27	7	1	cylindrical	partially ground	H1b or H2	
1524-00898	27	8	1	cylindrical	partially ground	H1b	
1524-00898	27	9	1.4	bi-conical	ground	K2 or G1	thickness ranges from 0.9-1.9, burned
1524-00898	27	10	0.8	cylindrical	ground		needle-drilled; not *Olivella*
1524-00899	27	1	1	cylindrical or bi-conical	ground	H1ai or G2ai	two beads glued together (measurements include both beads); ochre and asphaltum; incised
1524-00926	126	1	1	cylindrical	partially ground	H1b	
1524-00926	126	2	1.2	bi-conical	ground	K2 or G1	
1524-00926	126	3	1	cylindrical	partially ground	H1b or H2	
1524-00999	131	1	1.4		ground	A1a	
1524-00999	131	2	1.4	bi-conical	ground	K2 or G1	thickness ranges from 0.7-1.6
1524-01023	137	1	1.4	bi-conical	ground	K2 or G1	thickness ranges from 0.8-1.4
1524-01023	137	2	1.4	bi-conical	ground	G1	
1524-01023	137	3	1.3	bi-conical	ground	G1	
1524-01023	137	4	1.1	bi-conical	ground	G1	
1524-01023	137	5	1.4	bi-conical	ground	K2i or G1i	thickness ranges from 0.7-1.5, incised, asphaltum, ochre
1524-01023	137	6	1.6	bi-conical	ground	G1	
1524-01023	137	7	1.3	bi-conical	ground	K2 or G1	thickness ranges from 0.8-1.5
1524-01023	137	8	1.2	bi-conical	ground	G1	
1524-01023	137	9	1.2	bi-conical	ground	K2 or G1	
1524-01023	137	10	1.2	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-01023	137	11	1	bi-conical	ground		not *Olivella*
1524-01023	137	12	1.4	ventral cone	ground	G1	
1524-01023	137	13	1.3	bi-conical	ground	G1	
1524-01023	137	14	1.2	bi-conical	ground	G1	
1524-01023	137	15	1.3	bi-conical	ground	G1	
1524-01023	137	16	1.5	bi-conical	ground	G1	
1524-01023	137	17	1.4	bi-conical	ground	K2 or G1	thickness ranges from 0.6-1.3
1524-01023	137	18	1.1	bi-conical	ground	G1	
1524-01023	137	19	1.4	bi-conical	ground	G1	
1524-01023	137	20	1.3	ventral cone	ground	G1	
1524-01023	137	21	1.3	bi-conical	ground	G1	
1524-01023	137	22	1.4	bi-conical	ground	G1	
1524-01023	137	23	1.3	ventral cone	ground	G1	
1524-01023	137	24	1.3	bi-conical	ground	K2 or G1	wide range in thickness
1524-01023	137	25	1.1	bi-conical	ground	K2 or G1	
1524-01023	137	26	1.3	bi-conical	ground	K2i or G1i	incised
1524-01023	137	27	1.3	ventral cone	ground	G1	
1524-01023	137	28	1.3	bi-conical	ground	G1	
1524-01023	137	29	1.2	bi-conical	ground	K2 or G1	
1524-01023	137	30	1.3	ventral cone	ground	G1	
1524-01023	137	31	1.5	bi-conical	ground	K2 or G1	
1524-01023	137	32	1.3	bi-conical	ground	G1	
1524-01023	137	33	1.1	bi-conical	ground		not *Olivella*
1524-01023	137	34	1.2	bi-conical	ground	G1i	incised

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-01023	137	35	1.4	bi-conical	ground	K2 or G1	wide range in thickness
1524-01023	137	36	1.3	bi-conical	ground	G1	
1524-01023	137	37	1.3	bi-conical	ground	G1i	incised, asphaltum
1524-01023	137	38	1.6	bi-conical	ground	K2 or G1	wide range in thickness
1524-01023	137	39	1.6	bi-conical	ground	K2 or G1	asphaltum, wide range in thickness
1524-01023	137	40	1.4	bi-conical	ground	G1	
1524-01023	137	41	1.4	bi-conical	ground	K2 or G1	
1524-01023	137	42	1.5	bi-conical	ground	G1	
1524-01077	139	1	1	ventral cone	ground	K3	
1524-01077	139	2	1.2	ventral cone	ground	K3	
1524-01077	139	3	1.2	ventral cone	ground	K3	
1524-01077	139	4	1.2	ventral cone	ground	K3	
1524-01077	139	5	1.3	bi-conical	ground	K3	
1524-01077	139	6	1.2	bi-conical	ground	K3	
1524-01077	139	7	1.2	bi-conical	ground	K3	
1524-01077	139	8	1.3	bi-conical	ground	K3	
1524-01077	139	9	1.3	ventral cone	ground	K3	
1524-01077	139	10	1.3	ventral cone	ground	K3	
1524-01077	139	11	1.3	ventral cone	ground	K3	
1524-01122	134	1	1.2	bi-conical	ground	G1	
1524-01122	134	2	1.4	bi-conical	ground	G1	
1524-01122	134	3	1.5	bi-conical	ground	G1	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-01122	134	4	1.4	bi-conical	ground	G1	
1524-01122	134	5	1.4	bi-conical	ground	G1	
1524-01122	134	6	1.3	bi-conical	ground	G1	
1524-01122	134	7	1.4	bi-conical	ground	G1	crumbly
1524-01122	134	8	1.2	bi-conical	ground	G1	
1524-01122	134	9	1.5	bi-conical	ground	G1	crumbly
1524-01122	134	10	1.4	bi-conical	ground	G1	
1524-01122	134	11	1.2	bi-conical	ground	G1	
1524-01122	134	12	1.4	bi-conical	ground	G1	
1524-01122	134	13	1.3	bi-conical	ground	G1	
1524-01122	134	14	1.3	bi-conical	ground	G1	
1524-01122	134	15	1.2	bi-conical	ground	G1	
1524-01122	134	16	1.3	bi-conical	ground	G1	
1524-01122	134	17	1.2	ventral cone	ground	G1	
1524-01122	134	18	1.5	bi-conical	ground	G1	
1524-01122	134	19	1.3	bi-conical	ground	G1	
1524-01122	134	20	1.4	bi-conical	ground	G1	
1524-01122	134	21	1.3	bi-conical	ground	G1	
1524-01122	134	22	1.2	bi-conical	ground	G1	
1524-01284	121	1					glass bead (only photographed)
1524-01285	121	1					fish bone, possible bead (only photographed)
1524-01286	121	1	2.6	bi-conical	ground		likely pismo clam; ochre
1524-01286	121	2	2.5	bi-conical	ground		likely pismo clam; ochre
1524-01286	121	3	2.5	bi-conical	ground		likely pismo clam; ochre
1524-01513	41	1	2	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	2	1.9	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	3	0.8	cylindrical	partially ground	H1b or H2	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-01513	41	4	2.3	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	5	1.7	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	6	2.2	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	7	1.7	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	8	1.8	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	9	2.4	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	10	1.8	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	11	2.1	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	12	2	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	13	2	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	14	1.7	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	15	2.2	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	16	1.8	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	17	2.1	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	18	2.1	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	19	2.2	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	20	2.4	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	21	2.3	bi-conical	ground	E2a1	full lipped according to Chester King
1524-01513	41	22	2.1	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	23	1.9	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	24	2.2	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	25	2.1	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	26	1.8	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	27	2.2	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	28	1.8	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	29	2.5	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	30	1.9	bi-conical	ground	E1a1	thin lipped according to Chester King
1524-01513	41	31	1.2	bi-conical	ground	G1i	incised, irregularly shaped perforation
1524-01513	41	32	1	bi-conical	ground		not *Olivella*

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-01513	41	33	1.7	bi-conical	ground		not *Olivella*
1524-01513	41	34	1	cylindrical	partially ground	H1b	inner bag #2 (rebagged since original bag did not seal, likely contained other Class H beads in this lot)
1524-01513	41	35	1	cylindrical or bi-conical	partially ground	G2a or H1b	not clear if perforation is needle-drilled; overall shape suggests Class H
1524-01513	41	36	1.2	cylindrical or bi-conical	partially ground	G2a or H1b	not clear if perforation is needle-drilled; overall shape suggests Class H
1524-01513	41	37	1	cylindrical	partially ground	H1b	
1524-01513	41	38	0.7	cylindrical or bi-conical	partially ground	G2a or H1b	irregularly shaped perforation, not clear if perforation is needle-drilled; overall shape suggests Class H
1524-01513	41	39	1	cylindrical	partially ground	H1b	
1524-01513	41	40	0.9	cylindrical	partially ground	H1b	
1524-01513	41	41	1	cylindrical	partially ground	H1b	
1524-01513	41	42	1	cylindrical	partially ground	H1b	
1524-01513	41	43	0.9	cylindrical	partially ground	H1b	
1524-01513	41	44	0.9	cylindrical	partially ground	H1b	
1524-01513	41	45	0.8	cylindrical	partially ground	H1b	
1524-01513	41	46	0.8	cylindrical	partially ground	H1b	

AC	Feature	Bead #	Perforation Diameter (mm)	Perforation Shape	Edge Finish	Visual Type	Notes
1524-01513	41	47	1	cylindrical	partially ground	H1b	
1524-01513	41	48	0.9	cylindrical	partially ground	H1b	
1524-01513	41	49	1.2	bi-conical	partially ground	G2a or H1b	overall shape indicates Class H, but perforation is not cylindrical
1524-01513	41	50	1.1	bi-conical	ground	G1	
1524-01531	138	1	1.6	ventral cone	ground	G2a	burned
1524-01575	121	1	0.8	cylindrical	partially ground	H1b	
1524-01575	121	2	1.4	ventral cone	ground	K2	
1524-01575	121	3	1.5	bi-conical	ground	K2 or G1	ochre

APPENDIX B: PHOTOGRAPHS OF BEADS

Beads are numbered from left to right and top to bottom. The scale in the photos is in centimeters. Photographs are in numerical order based on excavation year and acquisition number. Acquisition numbers from the 1988 excavation are in the format 1524-XXXX, and acquisition numbers from the 1989 excavation are in the format 1524-XXXXX. For lots in which only a sample of beads was measured, the unmeasured beads were photographed for inclusion in this appendix.

Excavation Year 1988

Figure 4: AC 1524-0737 (1988), Feature 49, Beads 1-10, Ventral Side (scale in cm)

Figure 5: AC 1524-0737 (1988), Feature 49, Beads 1-10, Dorsal Side (scale in cm)

Figure 6: AC 1524-0737 (1988), Feature 49, Beads 1-10, Edge of Some Thick Beads (scale in cm)

Figure 7: AC 1524-0737 (1988), Feature 49, Beads 11-20, Ventral Side (scale in cm)

Figure 8: AC 1524-0737 (1988), Feature 49, Beads 11-20, Dorsal Side (scale in cm)

Figure 9: AC 1524-0737 (1988), Feature 49, Beads 11-20, Edge of Some Thick Beads (scale in cm)

Figure 10: AC 1524-0737 (1988), Feature 49, Unmeasured Beads (scale in cm)

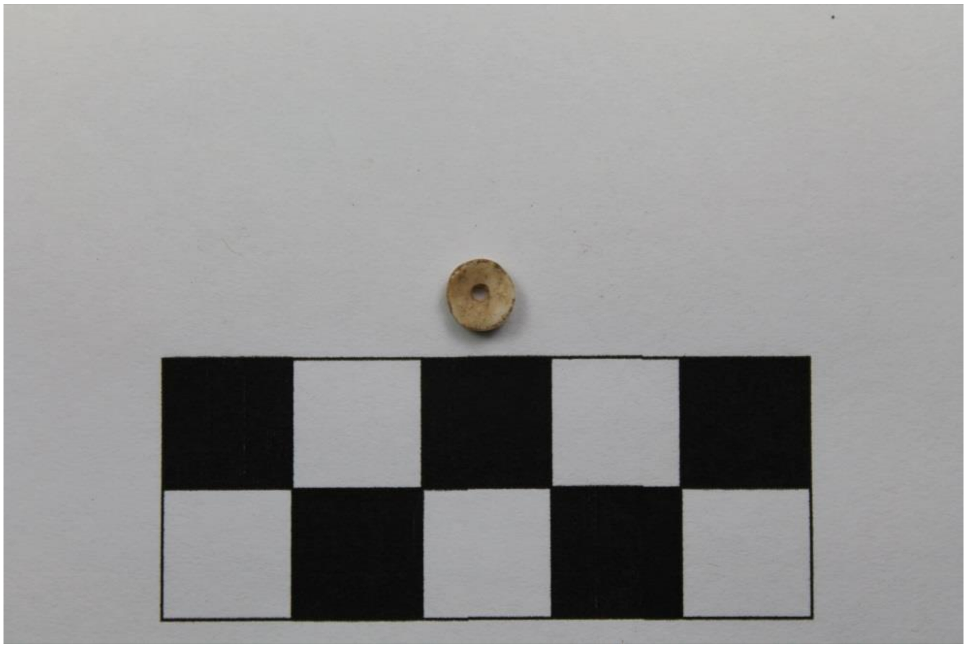


Figure 11: AC 1524-0738 (1988), Feature 49, Bead 1, Ventral Side (scale in cm)

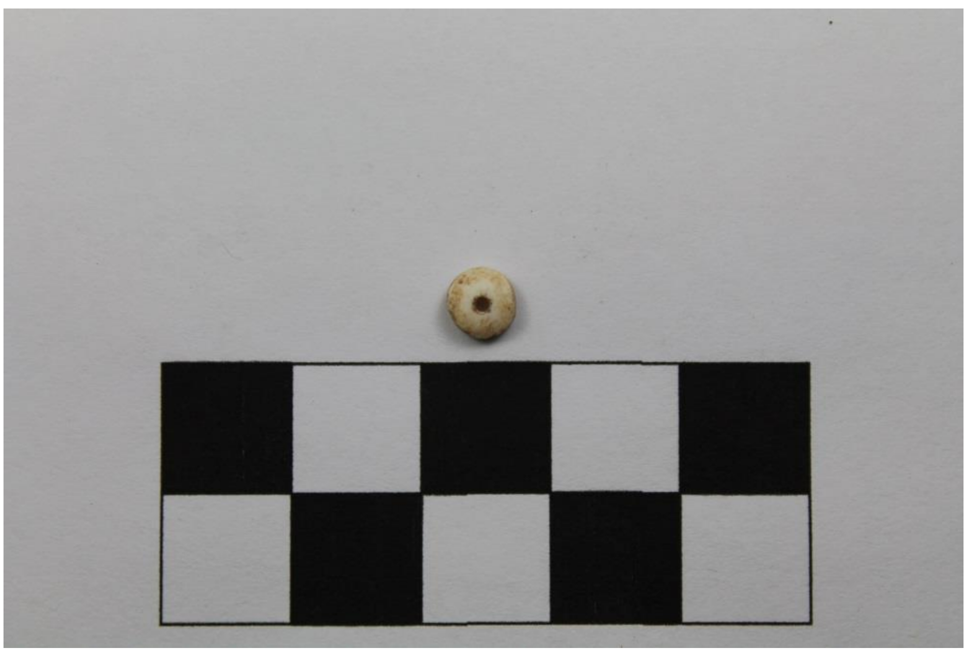


Figure 12: AC 1524-0738 (1988), Feature 49, Bead 1, Dorsal Side (scale in cm)

Figure 13: AC 1524-0742 (1988), Feature 49, Beads 1-10, First Side (scale in cm)

Figure 14: AC 1524-0742 (1988), Feature 49, Beads 1-10, Second Side (scale in cm)

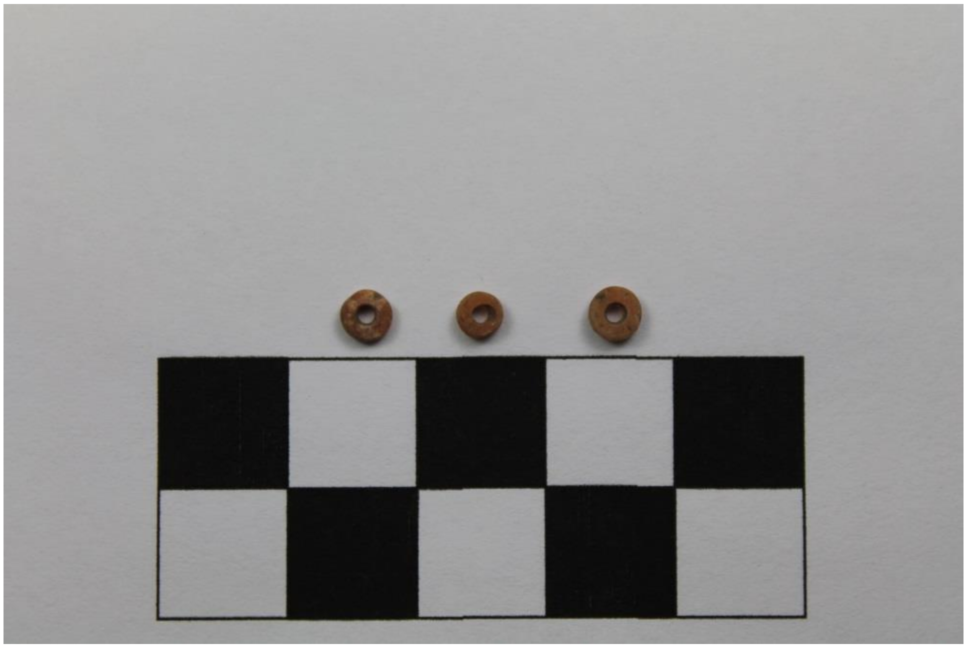


Figure 15: AC 1524-0742 (1988), Feature 49, Beads 11-13, First Side (scale in cm)

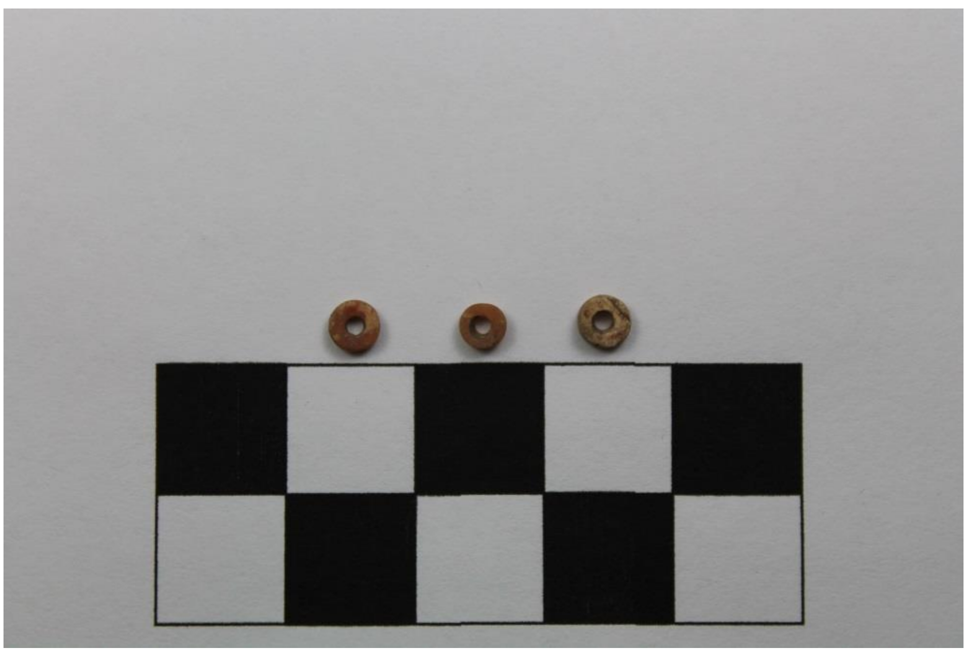


Figure 16: AC 1524-0742 (1988), Feature 49, Beads 11-13, Second Side (scale in cm)

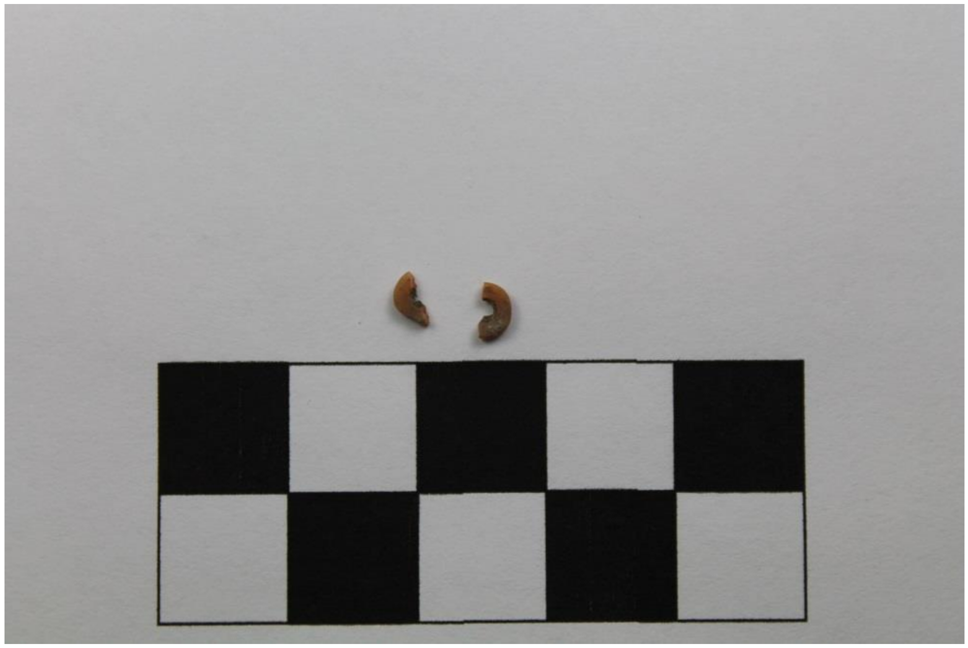


Figure 17: AC 1524-0742 (1988), Feature 49, Unmeasured Bead (scale in cm)

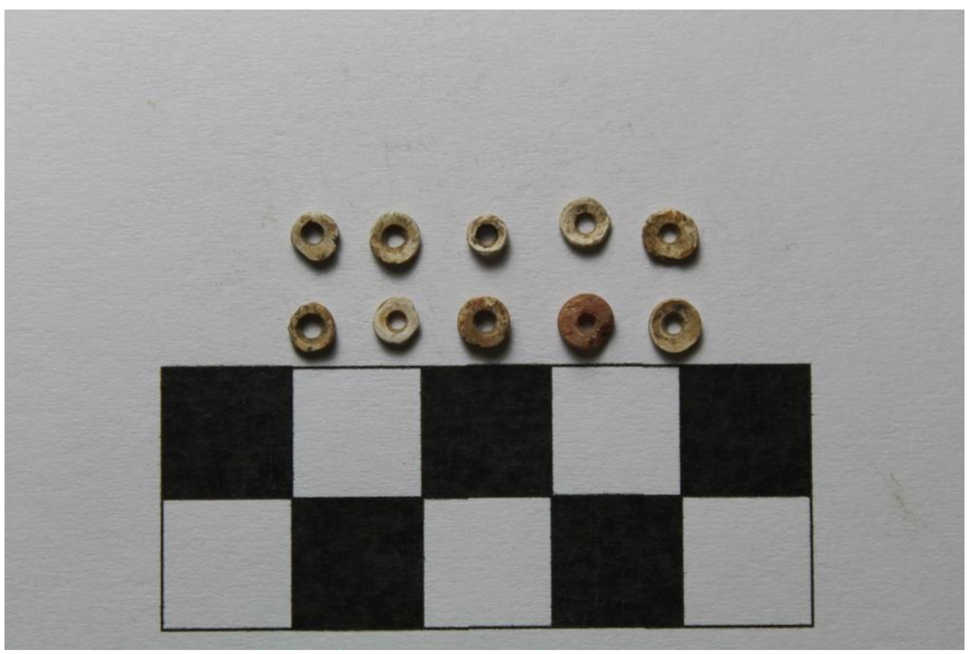


Figure 18: AC 1524-0753 (1988), Feature 48, Beads 1-10, Ventral Side (scale in cm)

Figure 19: AC 1524-0753 (1988), Feature 48, Beads 1-10, Dorsal Side (scale in cm)

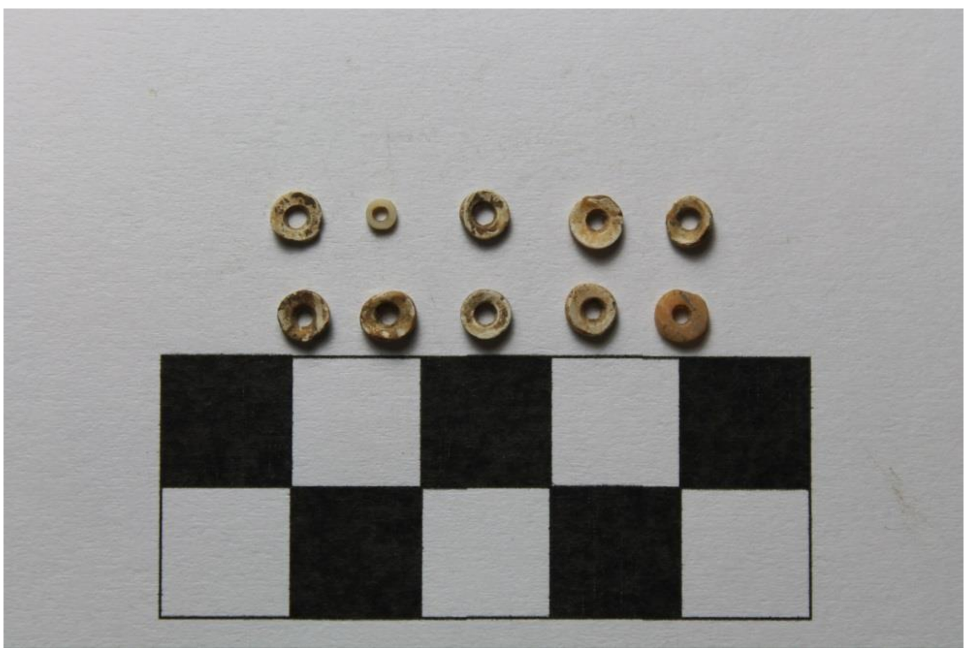


Figure 20: AC 1524-0753 (1988), Feature 48, Beads 11-20, Ventral Side (scale in cm)

Figure 21: AC 1524-0753 (1988), Feature 48, Beads 11-20, Dorsal Side (scale in cm)

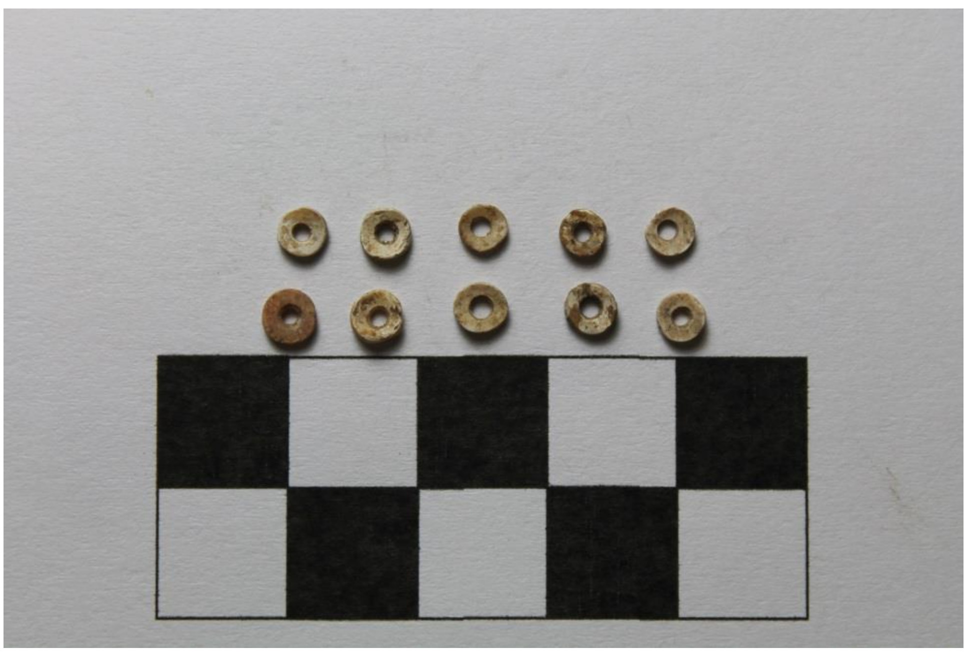


Figure 22: AC 1524-0753 (1988), Feature 48, Beads 21-30, Ventral Side (scale in cm)

Figure 23: AC 1524-0753 (1988), Feature 48, Beads 21-30, Dorsal Side (scale in cm)

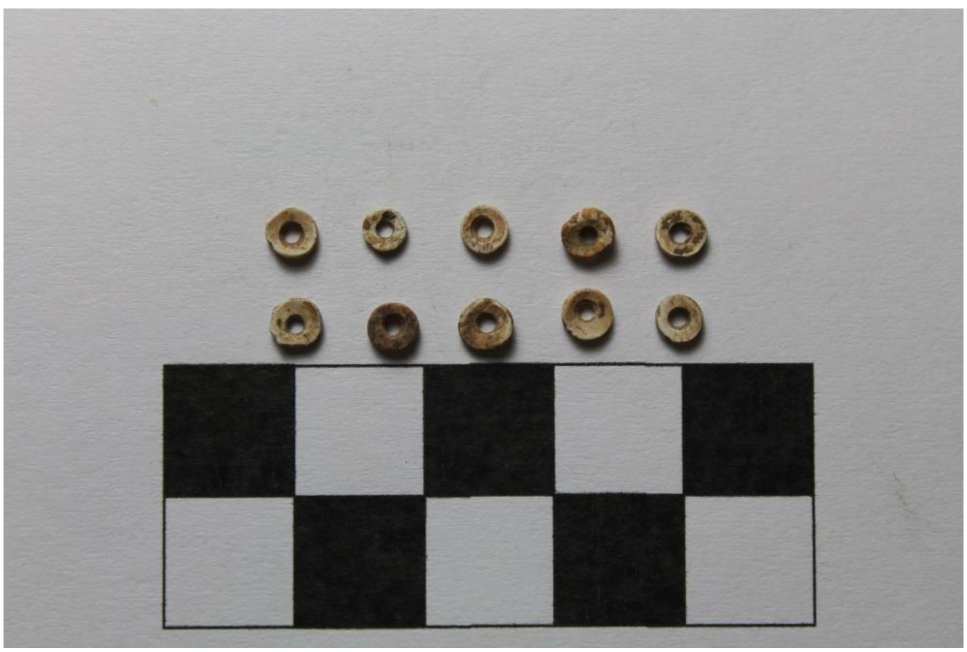


Figure 24: AC 1524-0753 (1988), Feature 48, Beads 31-40, Ventral Side (scale in cm)

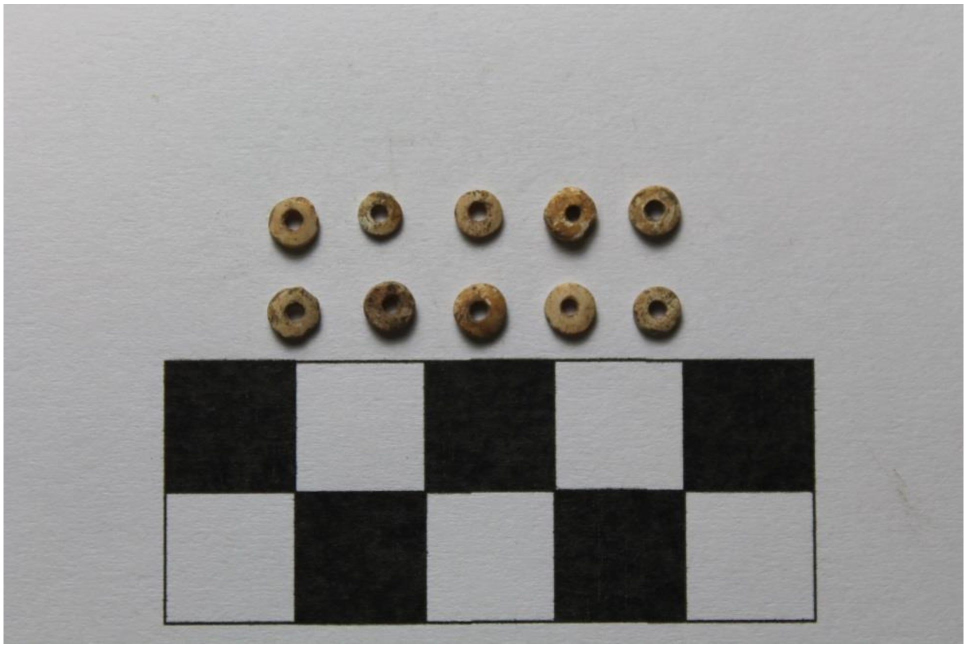


Figure 25: AC 1524-0753 (1988), Feature 48, Beads 31-40, Dorsal Side (scale in cm)

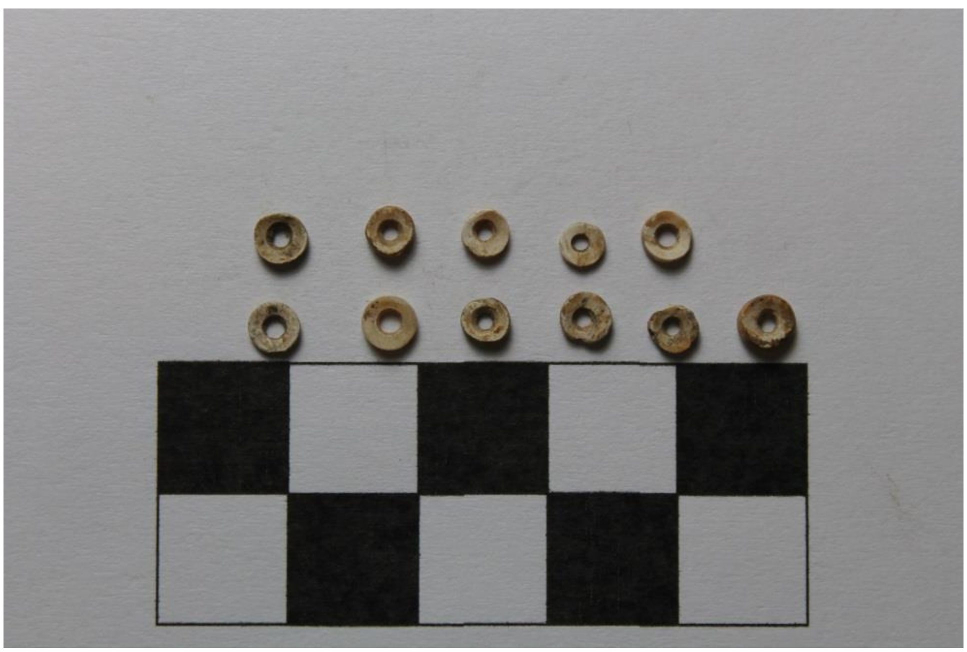


Figure 26: AC 1524-0753 (1988), Feature 48, Beads 41-51, Ventral Side (scale in cm)

Figure 27: AC 1524-0753 (1988), Feature 48, Beads 41-51, Dorsal Side (scale in cm)

Figure 28: AC 1524-0753 (1988), Feature 48, Unmeasured Beads (scale in cm)

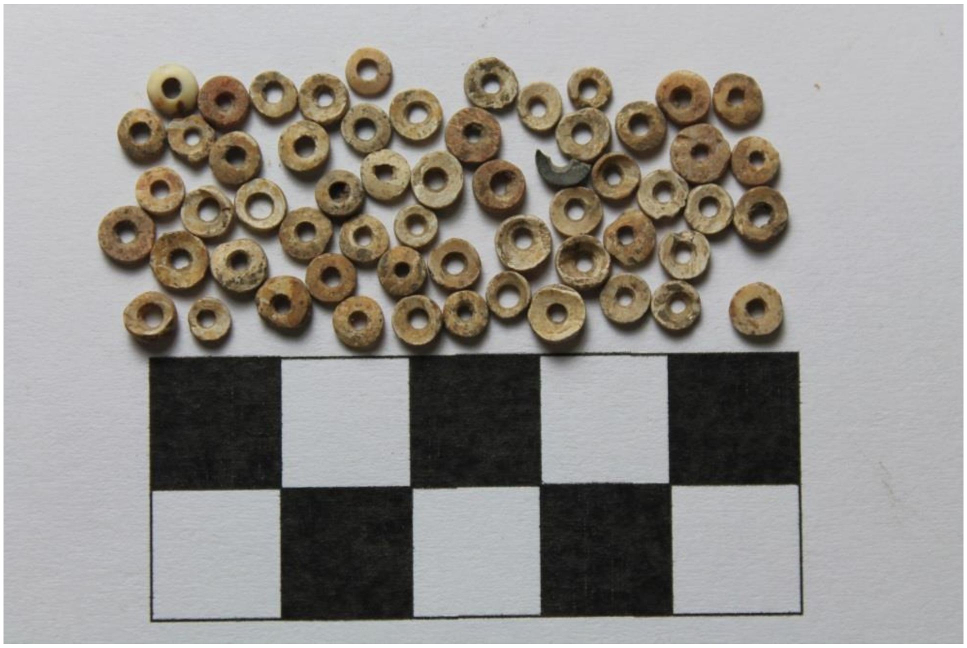


Figure 29: AC 1524-0753 (1988), Feature 48, Unmeasured Beads (scale in cm)

Figure 30: AC 1524-0753 (1988), Feature 48, Unmeasured Beads (scale in cm)

Figure 31: AC 1524-0753 (1988), Feature 48, Unmeasured Beads (scale in cm)

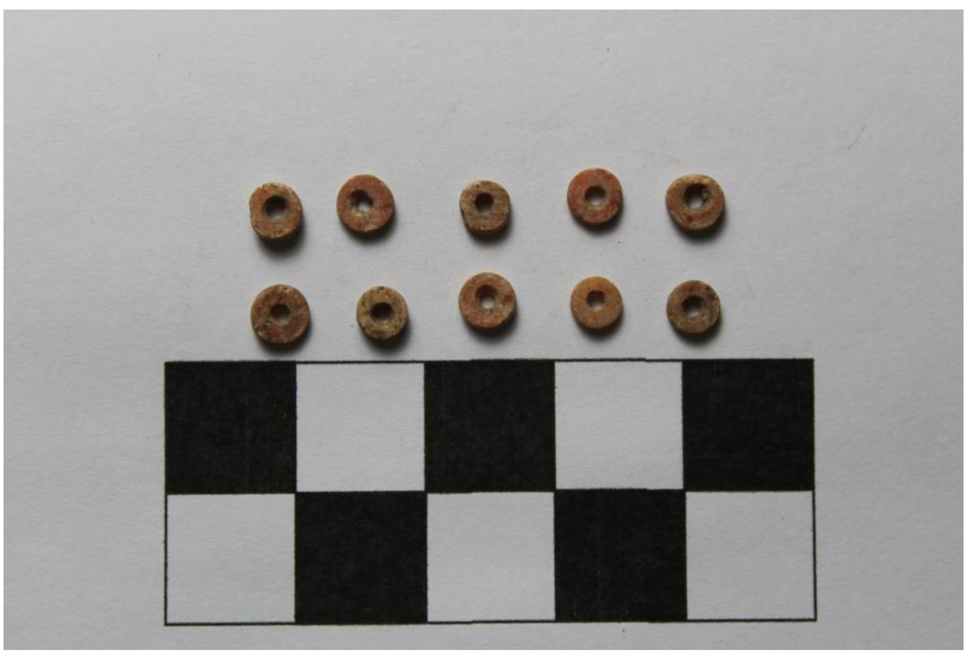


Figure 32: AC 1524-0754 (1988), Feature 48, Beads 1-10, First Side (scale in cm)

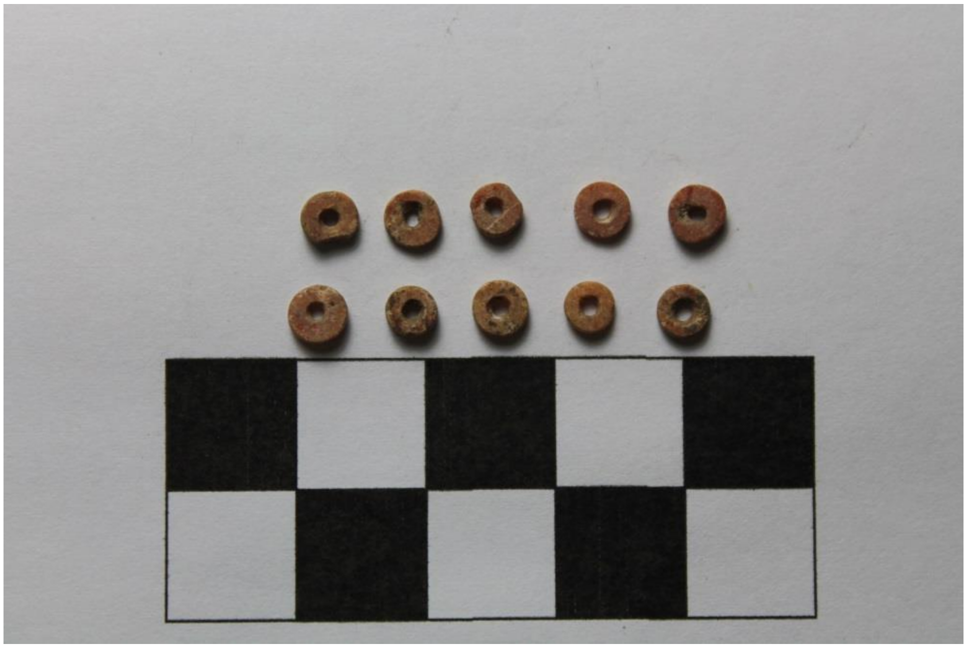


Figure 33: AC 1524-0754 (1988), Feature 48, Beads 1-10, Second Side (scale in cm)

Figure 34: AC 1524-0755 (1988), Feature 48, Beads 1-12, First Side (scale in cm)

Figure 35: AC 1524-0755 (1988), Feature 48, Beads 1-12, Second Side (scale in cm)

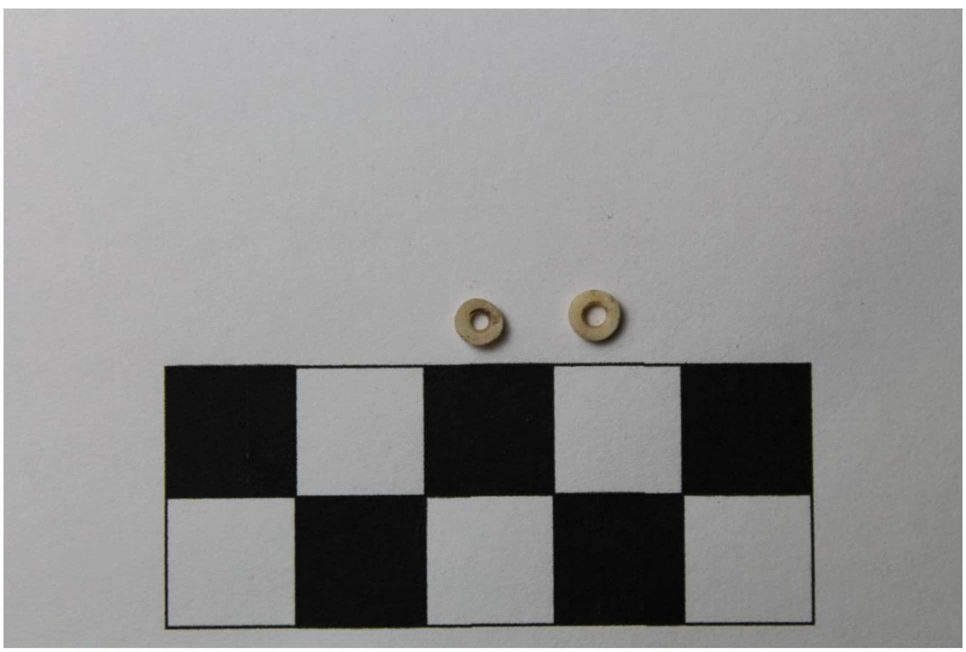


Figure 36: AC 1524-0799 (1988), Feature 51, Beads 1-2, Ventral Side (scale in cm)

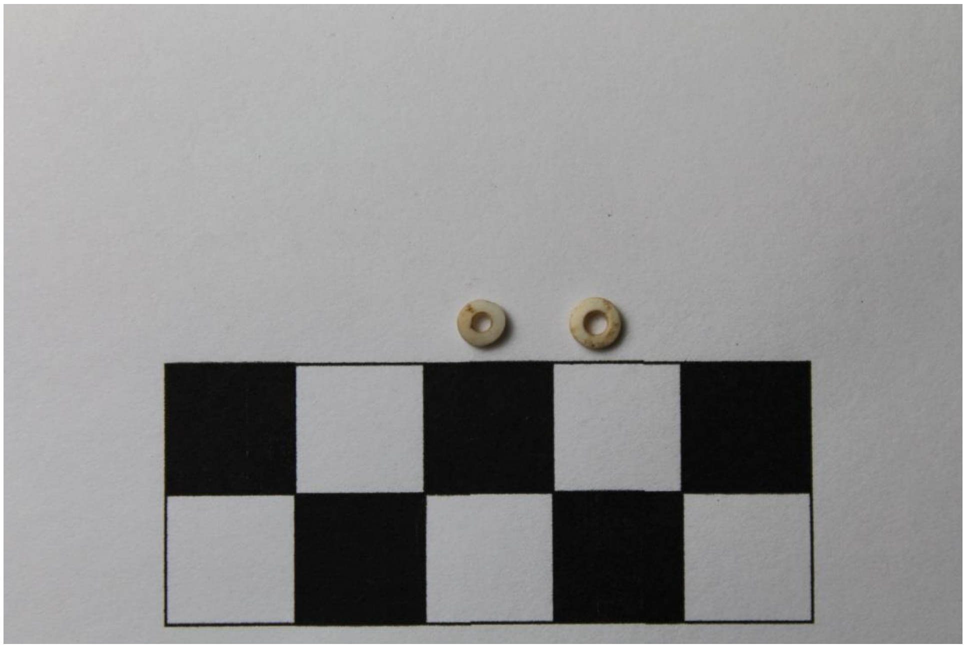


Figure 37: AC 1524-0799 (1988), Feature 51, Beads 1-2, Dorsal Side (scale in cm)

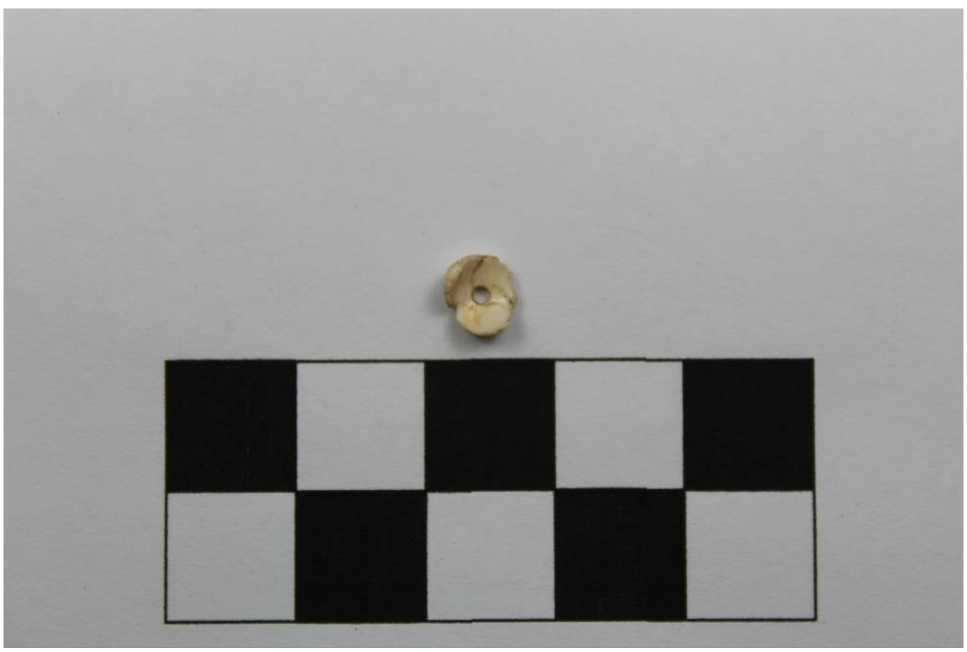


Figure 38: AC 1524-1419 (1988), Feature 90, Bead 1, Ventral Side (scale in cm)

Figure 39: AC 1524-1419 (1988), Feature 90, Bead 1, Dorsal Side (scale in cm)

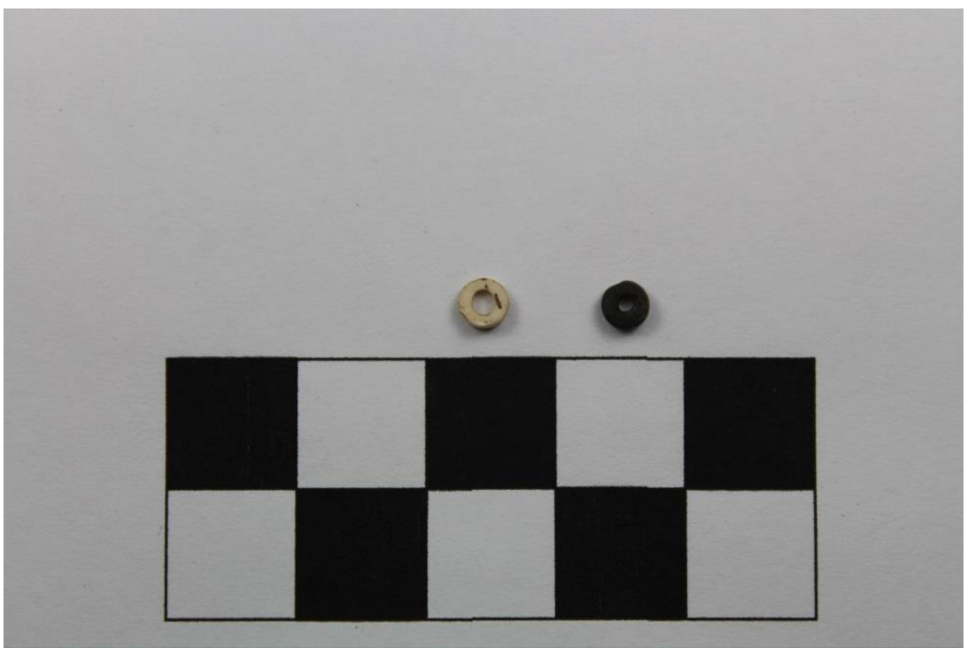


Figure 40: AC 1524-1420 (1988), Feature 90, Beads 1-2, Ventral Side (scale in cm)

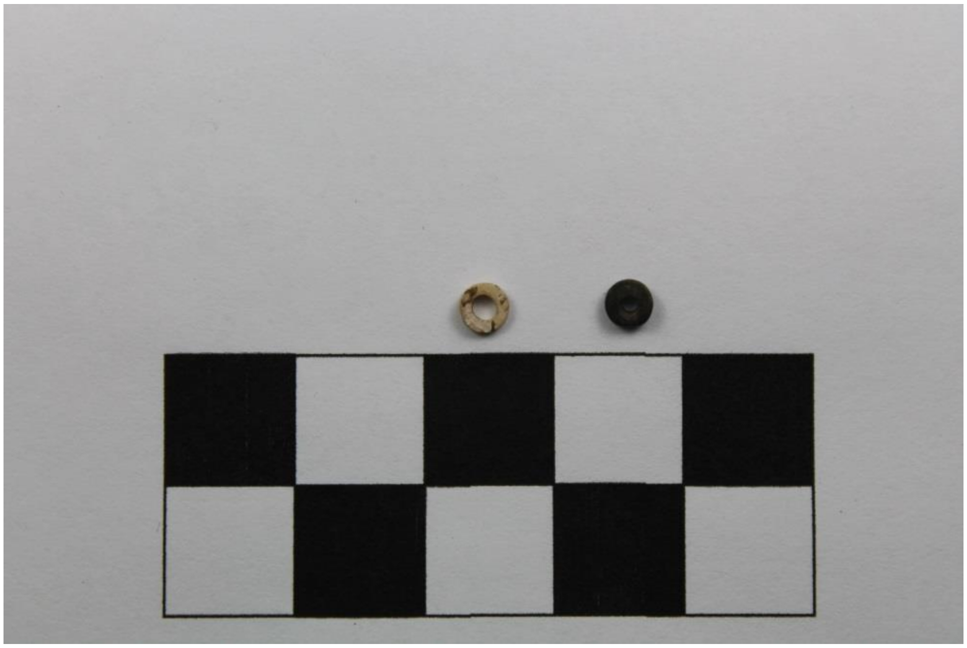


Figure 41: AC 1524-1420 (1988), Feature 90, Beads 1-2, Dorsal Side (scale in cm)

Figure 42: AC 1524-1420 (1988), Feature 90, Unmeasured Bead (scale in cm)

Figure 43: AC 1524-1430 (1988), Feature 90, Beads 1-5, Ventral Side (scale in cm)

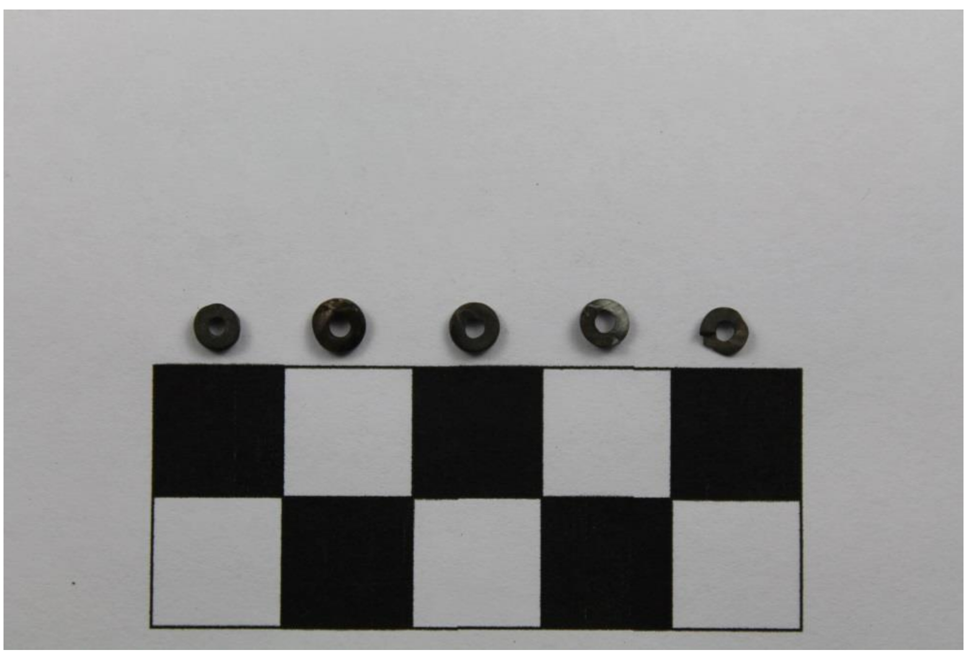


Figure 44: AC 1524-1430 (1988), Feature 90, Beads 1-5, Dorsal Side (scale in cm)

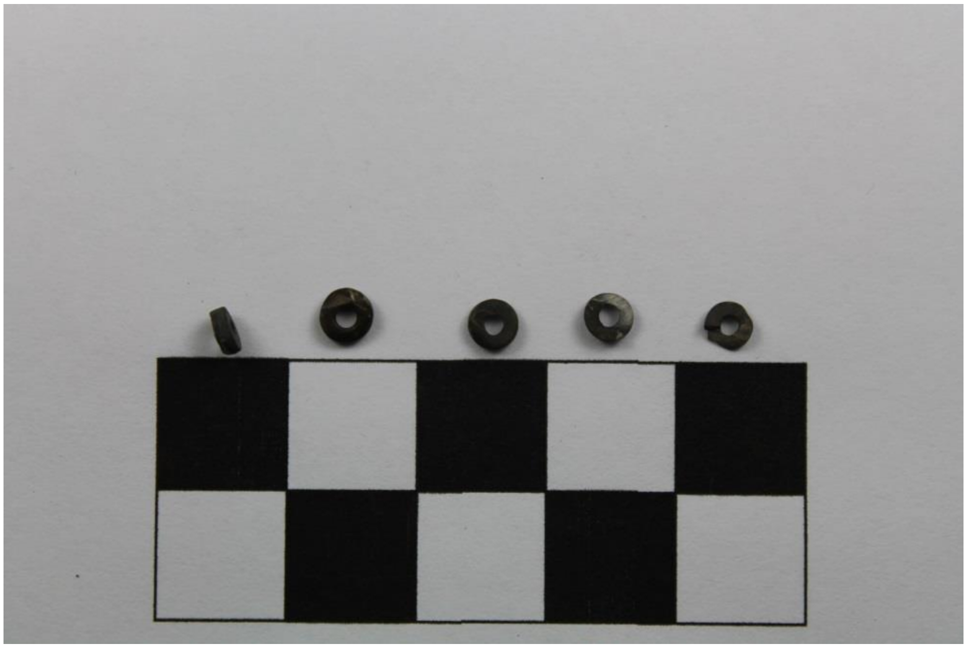


Figure 45: AC 1524-1430 (1988), Feature 90, Beads 1-5, Edge of Thick Bead (scale in cm)

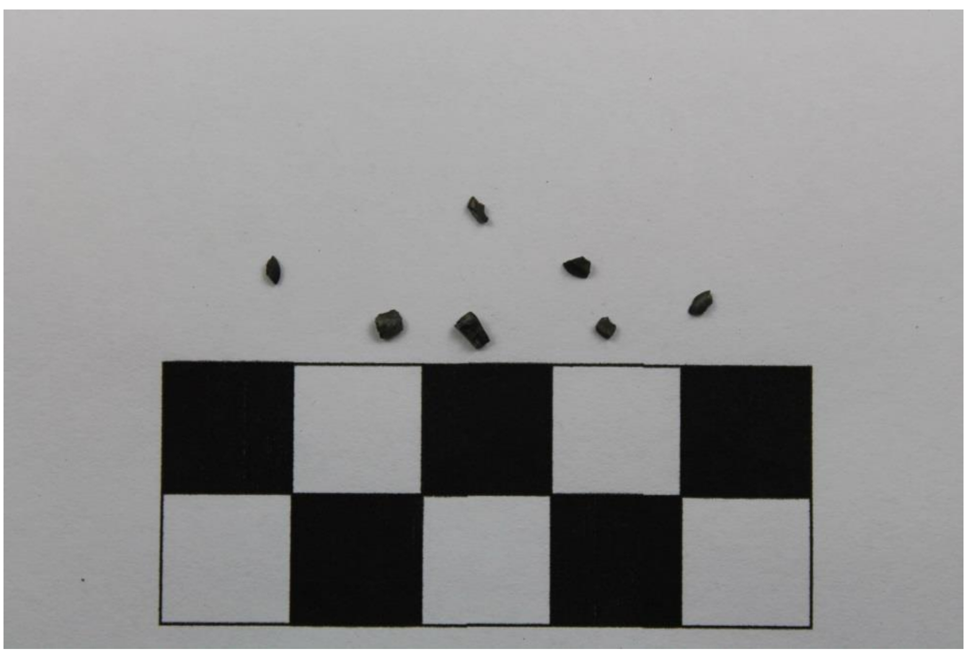


Figure 46: AC 1524-1430 (1988), Feature 90, Unmeasured Beads (scale in cm)

Figure 47: AC 1524-1431 (1988), Feature 90, Beads 1-2, Ventral Side (scale in cm)

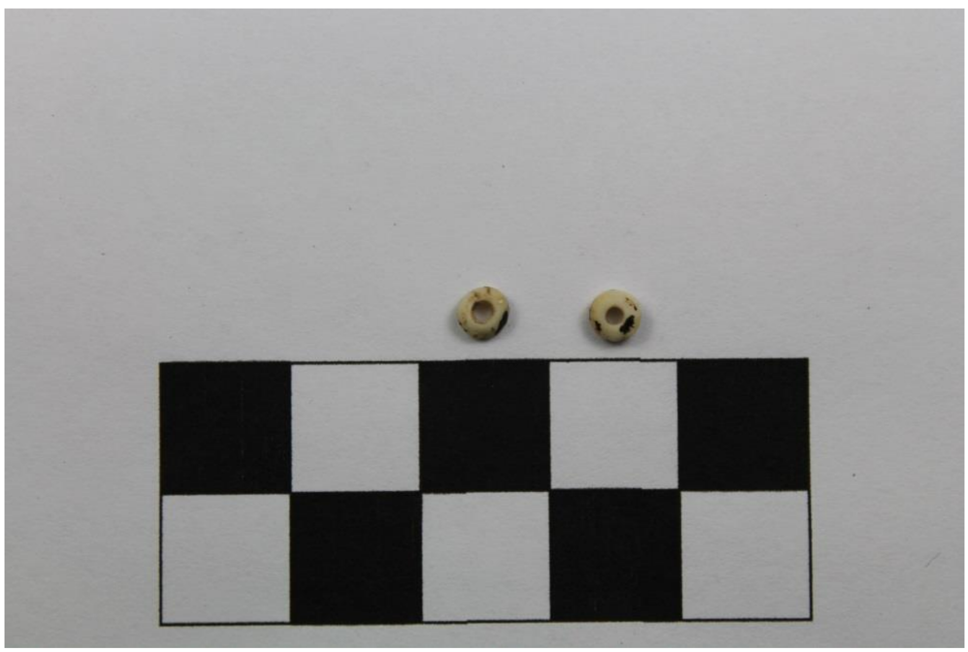


Figure 48: AC 1524-1431 (1988), Feature 90, Beads 1-2, Dorsal Side (scale in cm)

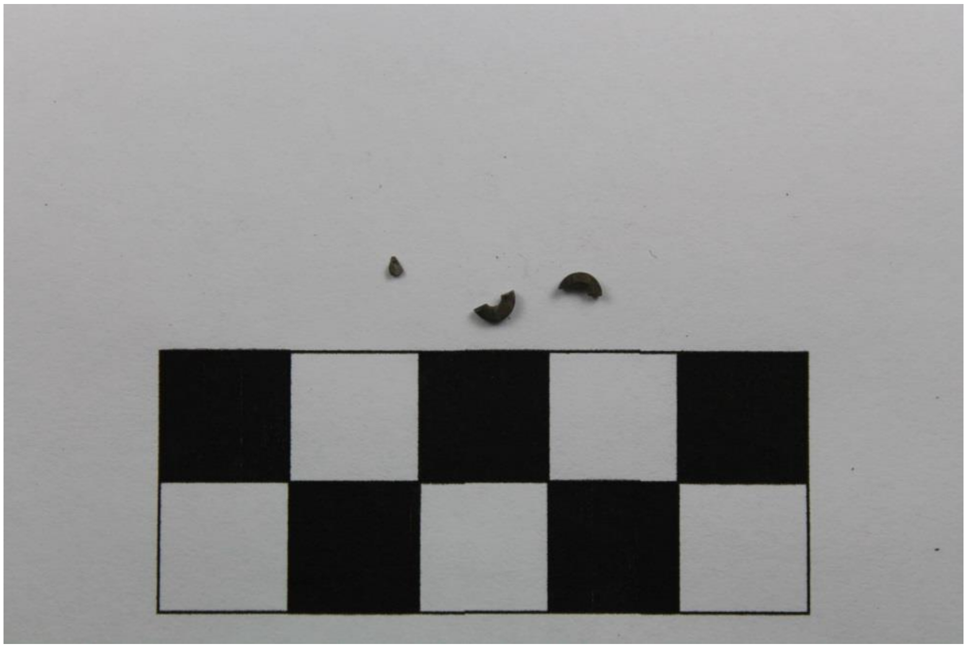


Figure 49: AC 1524-1432 (1988), Feature 90, Unmeasured Bead (scale in cm)

Figure 50: AC 1524-1713 (1988), Feature 47, Beads 1-3, Ventral Side (scale in cm)

Figure 51: AC 1524-1713 (1988), Feature 47, Beads 1-3, Dorsal Side (scale in cm)

Figure 52: AC 1524-1722 (1988), Feature 43, Beads 1-10, Ventral Side (scale in cm)

Figure 53: AC 1524-1722 (1988), Feature 43, Beads 1-10, Dorsal Side (scale in cm)

Figure 54: AC 1524-1722 (1988), Feature 43, Beads 11-16, Ventral Side (scale in cm)

Figure 55: AC 1524-1722 (1988), Feature 43, Beads 11-16, Dorsal Side (scale in cm)

Figure 56: AC 1524-1722 (1988), Feature 43, Unmeasured Beads (scale in cm)

Figure 57: AC 1524-1728 (1988), Feature 43, Beads 1-10, Ventral Side (scale in cm)

Figure 58: AC 1524-1728 (1988), Feature 43, Beads 1-10, Dorsal Side (scale in cm)

Figure 59: AC 1524-1728 (1988), Feature 43, Beads 11-20, Ventral Side (scale in cm)

Figure 60: AC 1524-1728 (1988), Feature 43, Beads 11-20, Dorsal Side (scale in cm)

Figure 61: AC 1524-1728 (1988), Feature 43, Unmeasured Beads (scale in cm)

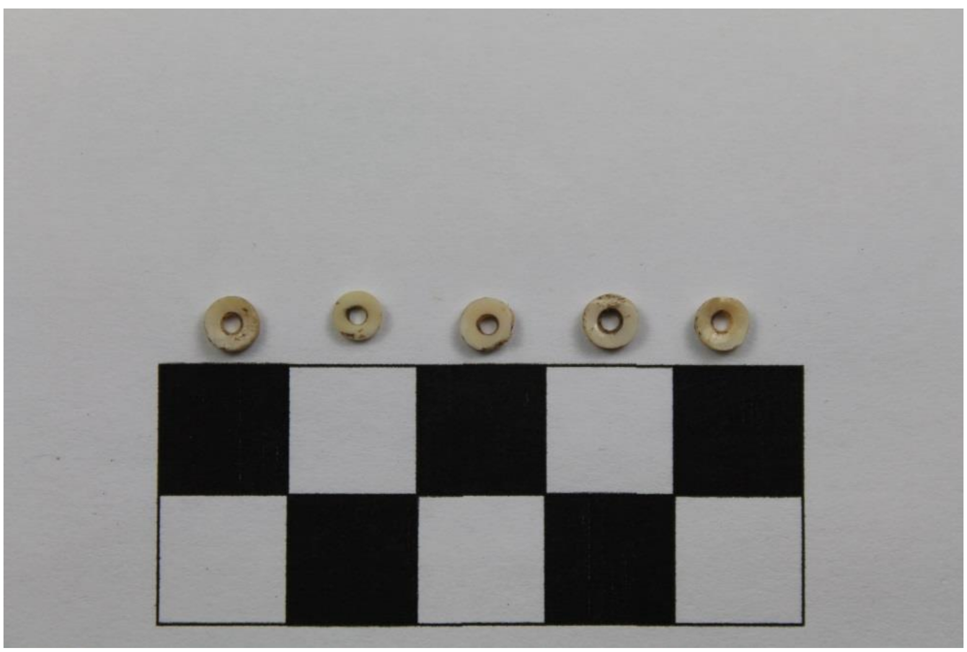


Figure 62: AC 1524-1743 (1988), Feature 4, Beads 1-5, Ventral Side (scale in cm)

Figure 63: AC 1524-1743 (1988), Feature 4, Beads 1-5, Dorsal Side (scale in cm)

Figure 64: AC 1524-1809 (1988), Feature 3, Bead 1, Ventral Side (scale in cm)

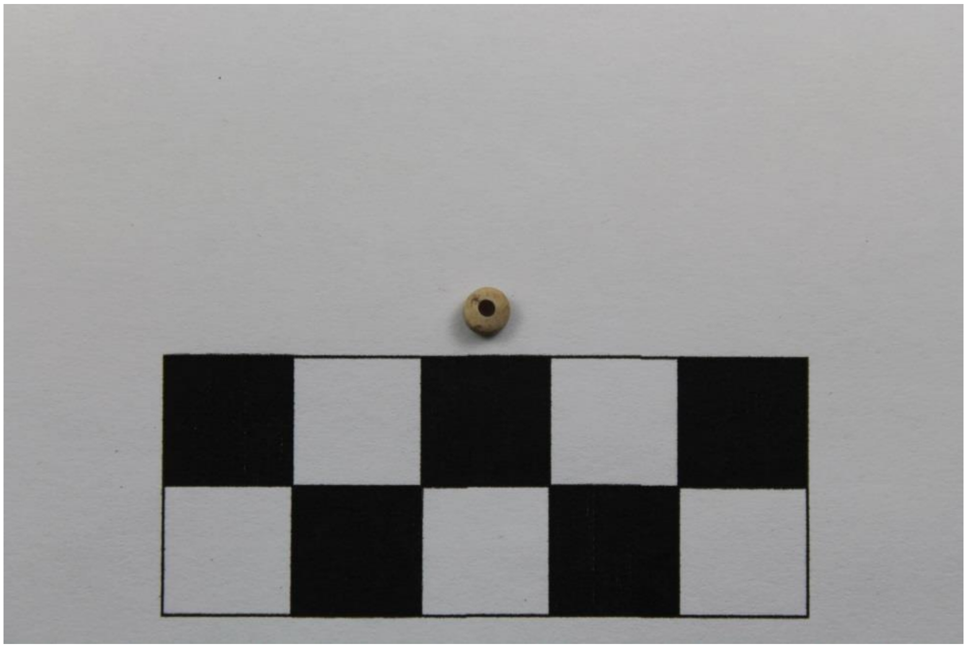


Figure 65: AC 1524-1809 (1988), Feature 3, Bead 1, Dorsal Side (scale in cm)

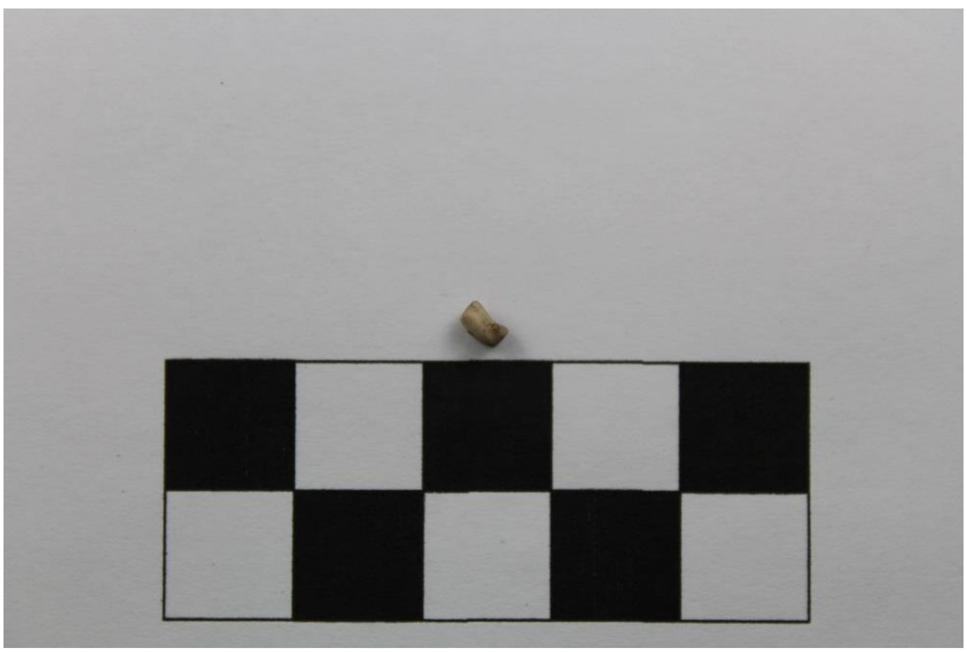


Figure 66: AC 1524-1809 (1988), Feature 3, Bead 1, Edge of Thick Bead (scale in cm)

Figure 67: AC 1524-1810 (1988), Feature 3, Bead 1, Ventral Side (scale in cm)

Figure 68: AC 1524-1810 (1988), Feature 3, Bead 1, Dorsal Side (scale in cm)

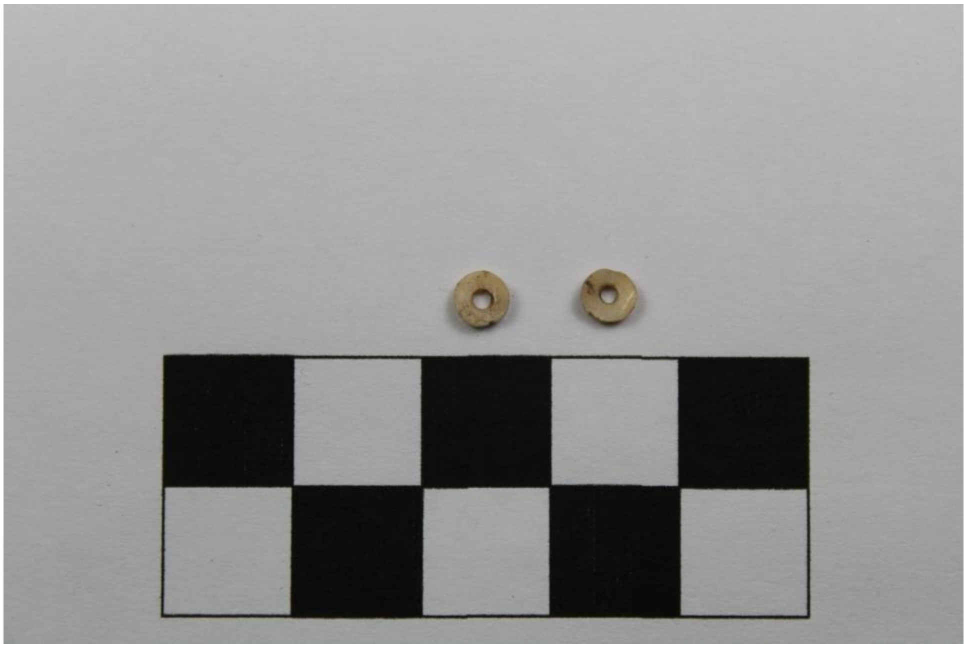


Figure 69: AC 1524-1811 (1988), Feature 4, Beads 1-2, Ventral Side (scale in cm)

Figure 70: AC 1524-1811 (1988), Feature 4, Beads 1-2, Dorsal Side (scale in cm)

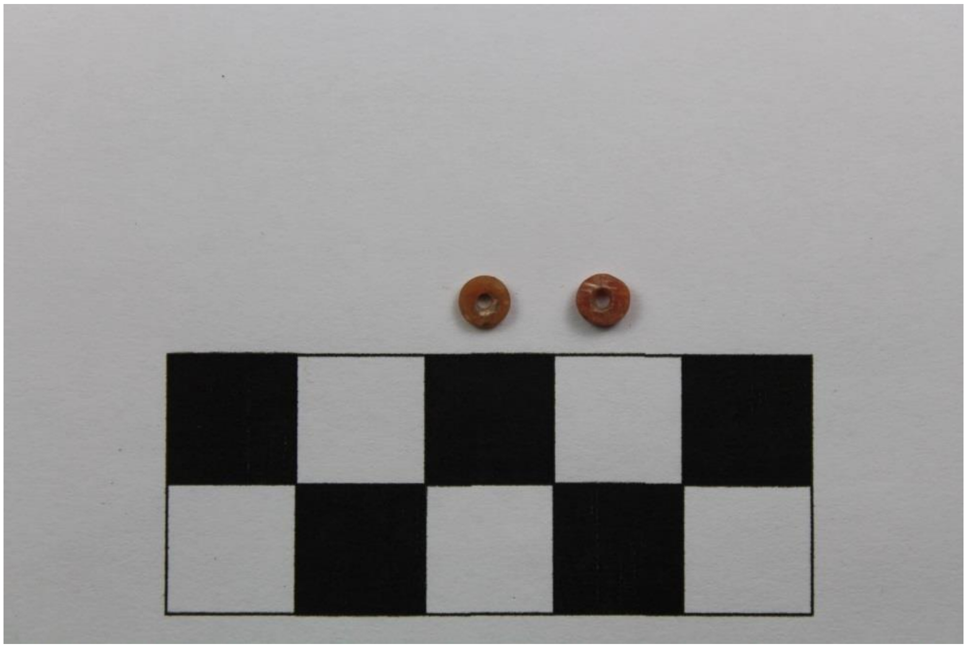


Figure 71: AC 1524-1814 (1988), Feature 4, Beads 1-2, First Side (scale in cm)

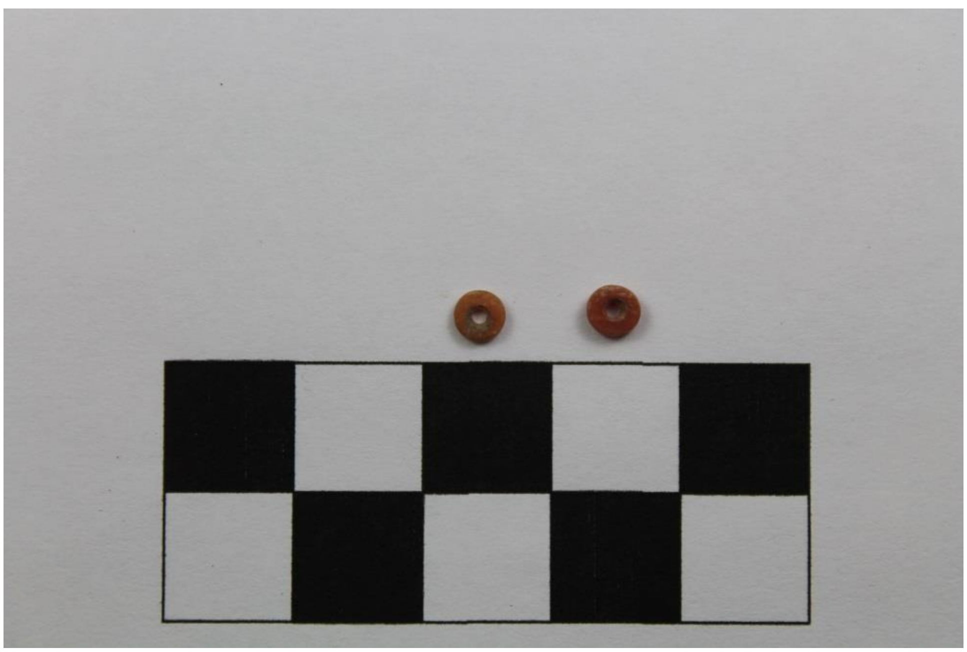


Figure 72: AC 1524-1814 (1988), Feature 4, Beads 1-2, Second Side (scale in cm)

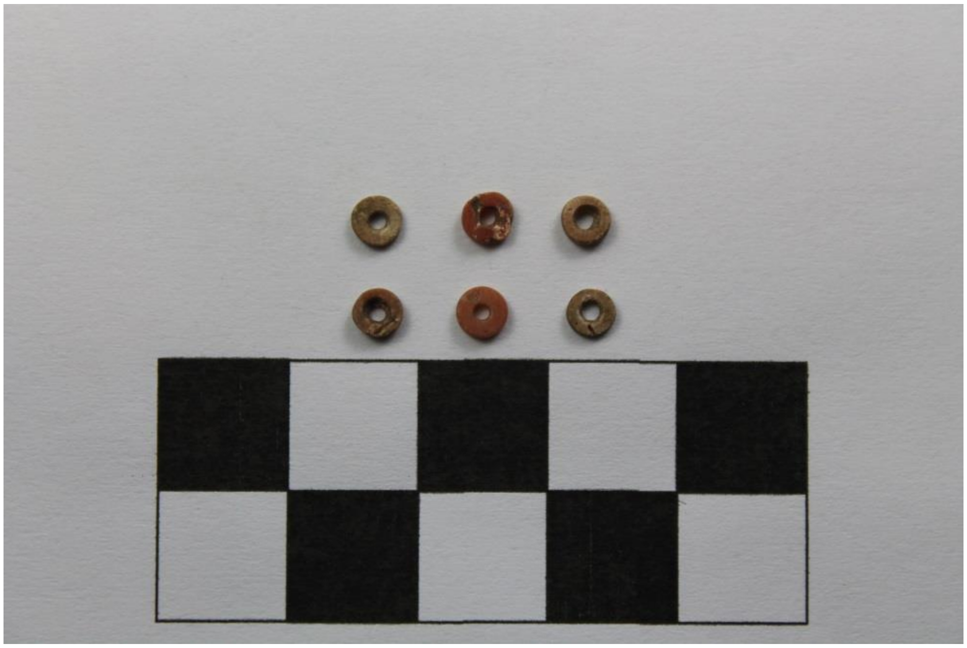


Figure 73: AC 1524-1886 (1988), Feature 4, Beads 1-6, First Side (scale in cm)

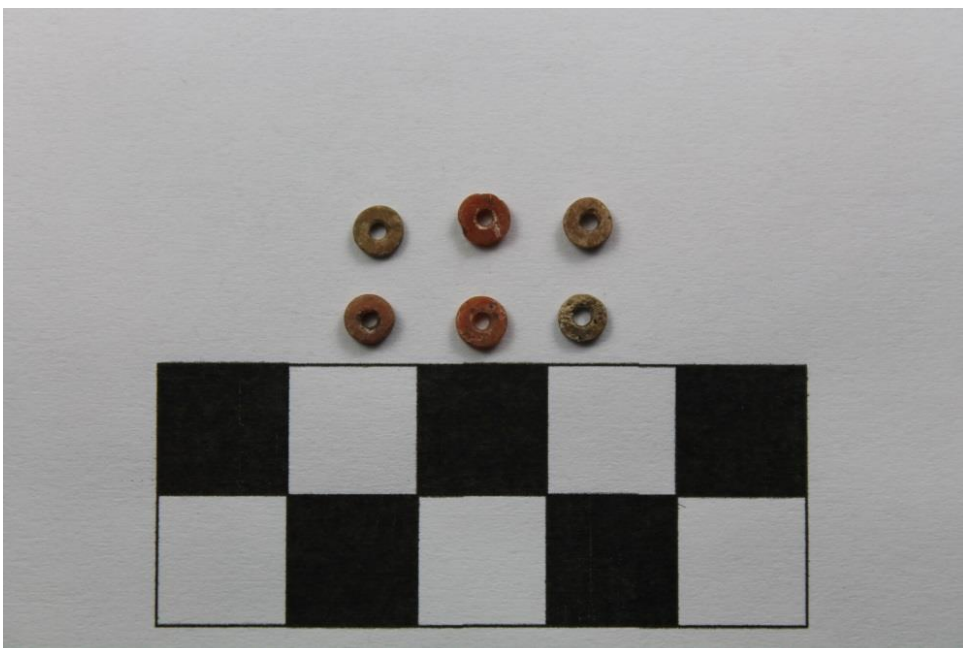


Figure 74: AC 1524-1886 (1988), Feature 4, Beads 1-6, Second Side (scale in cm)

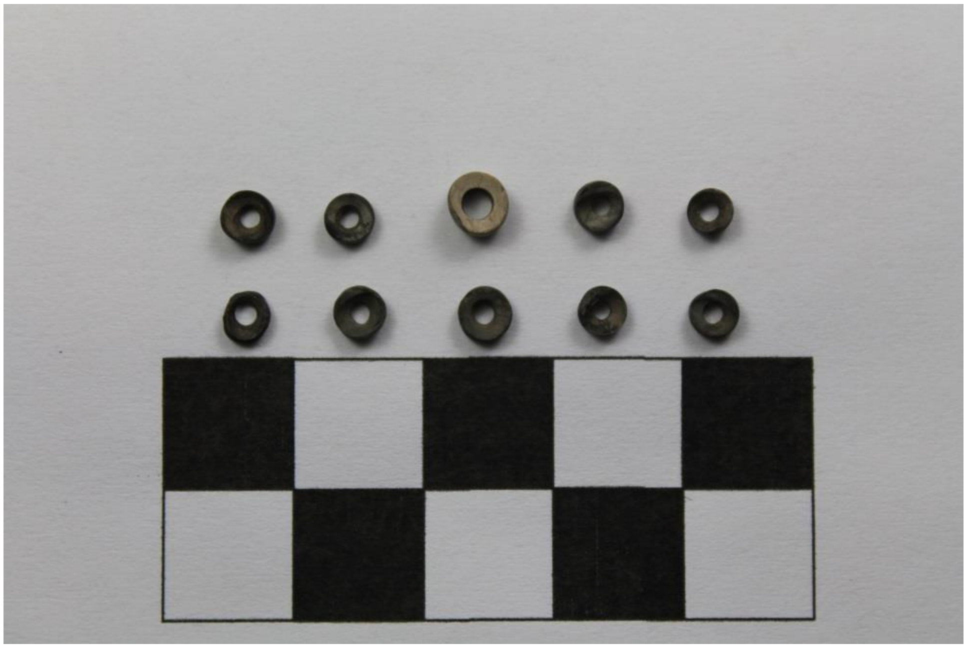


Figure 75: AC 1524-1887 (1988), Feature 4, Beads 1-10, Ventral Side (scale in cm)

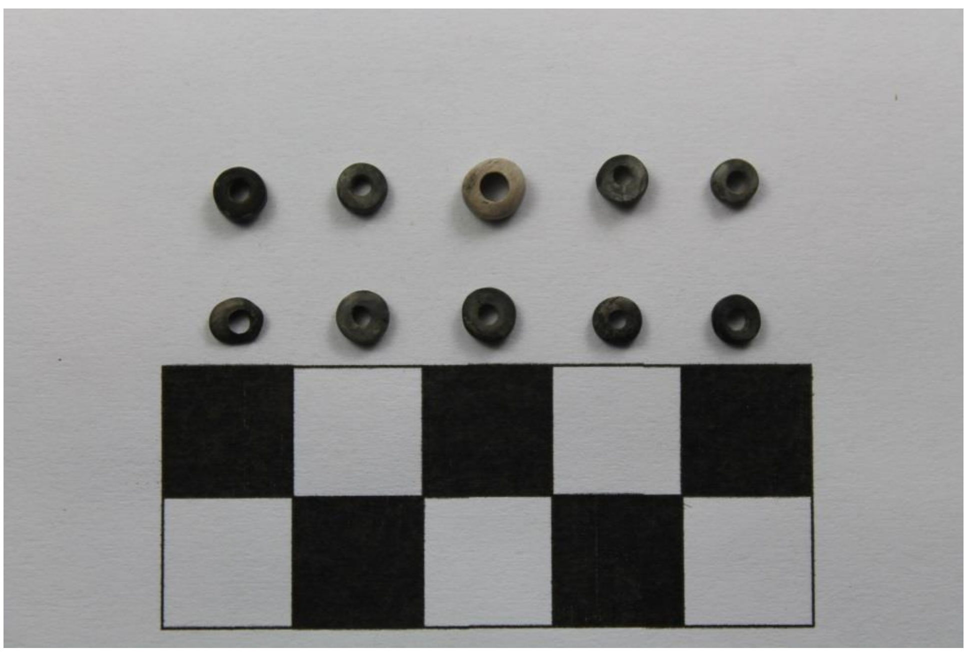


Figure 76: AC 1524-1887 (1988), Feature 4, Beads 1-10, Dorsal Side (scale in cm)

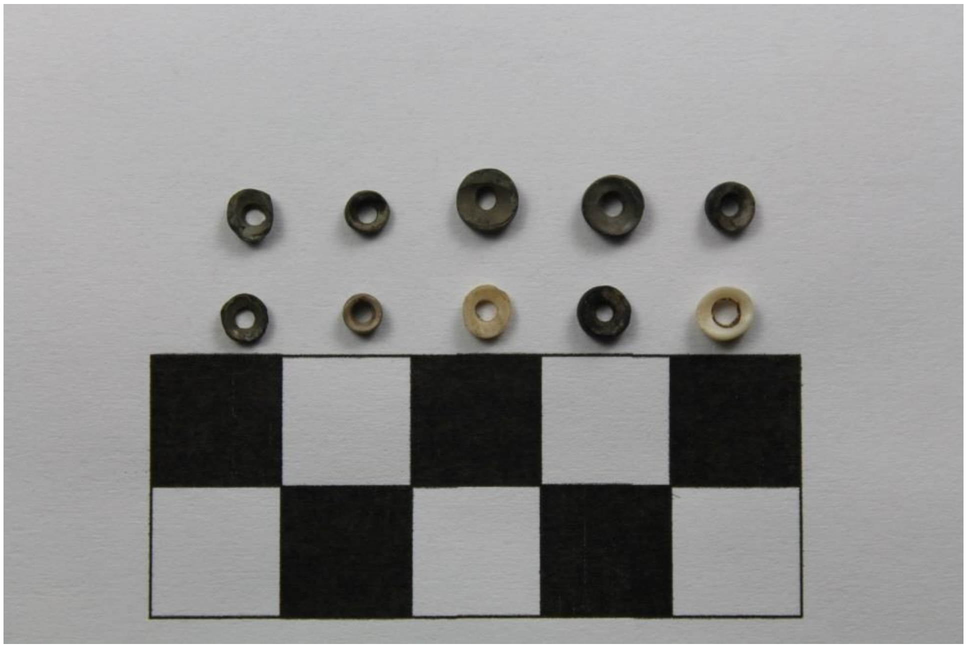


Figure 77: AC 1524-1887 (1988), Feature 4, Beads 11-20, Ventral Side (scale in cm)

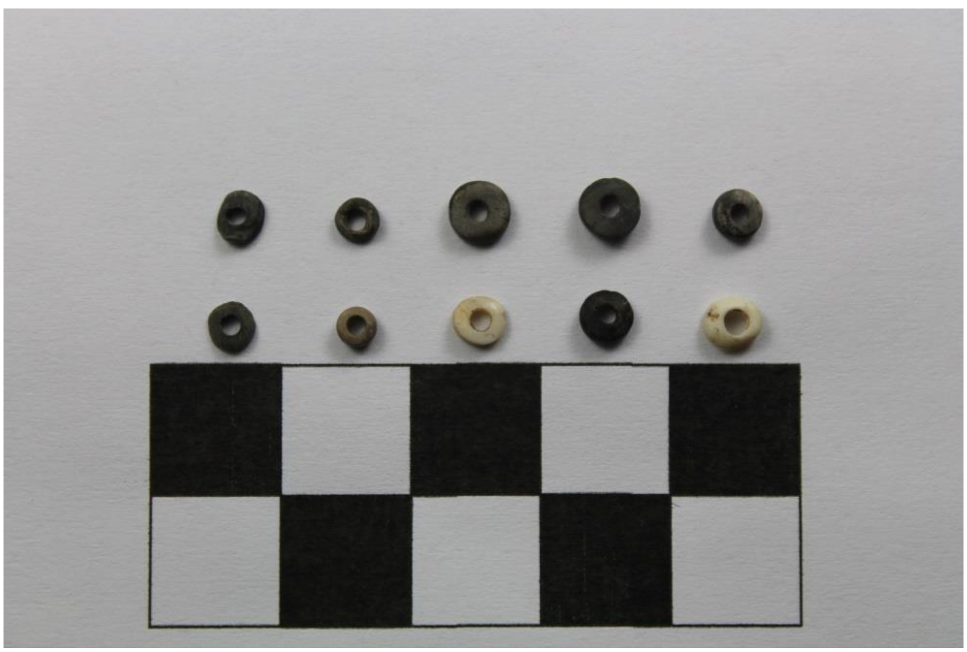


Figure 78: AC 1524-1887 (1988), Feature 4, Beads 11-20, Dorsal Side (scale in cm)

Figure 79: AC 1524-1887 (1988), Feature 4, Beads 11-20, Edge of Some Thick Beads (scale in cm)

Figure 80: AC 1524-1887 (1988), Feature 4, Unmeasured Beads (scale in cm)

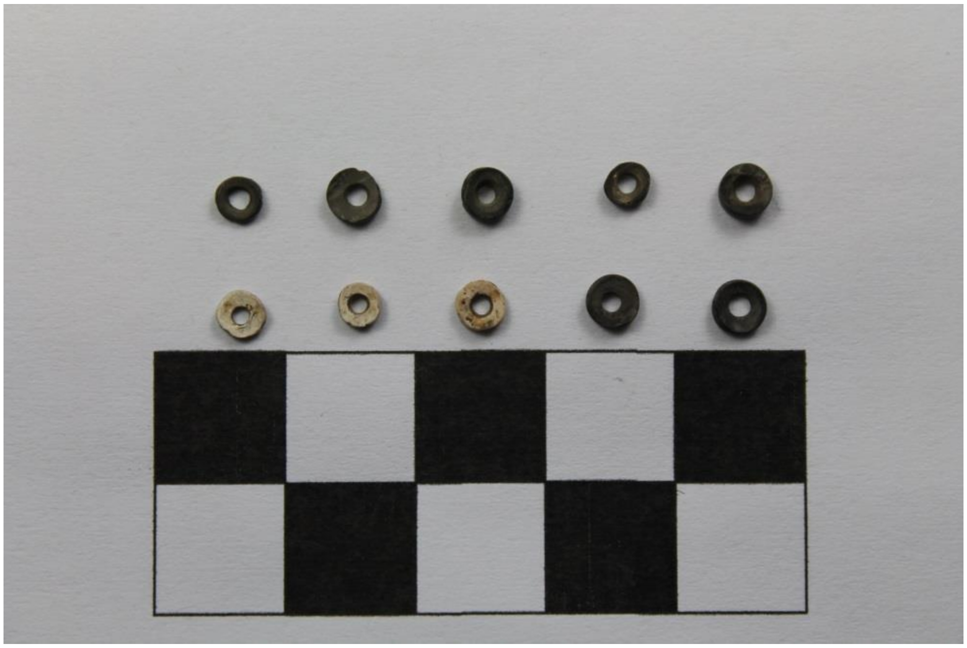


Figure 81: AC 1524-1888 (1988), Feature 4, Beads 1-10, Ventral Side (scale in cm)

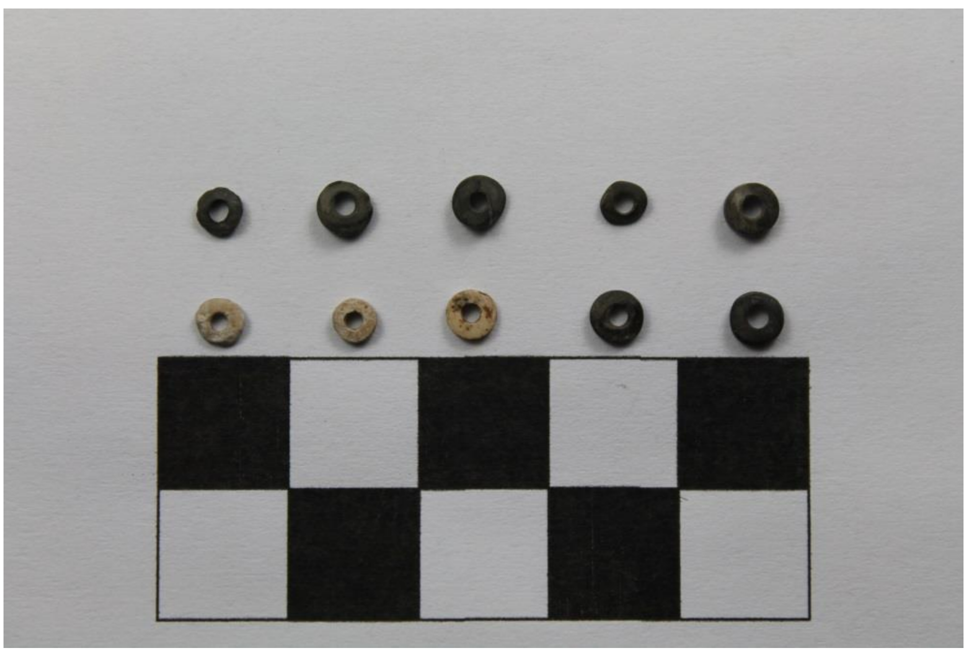


Figure 82: AC 1524-1888 (1988), Feature 4, Beads 1-10, Dorsal Side (scale in cm)

Figure 83: AC 1524-1888 (1988), Feature 4, Beads 11-20, Ventral Side (scale in cm)

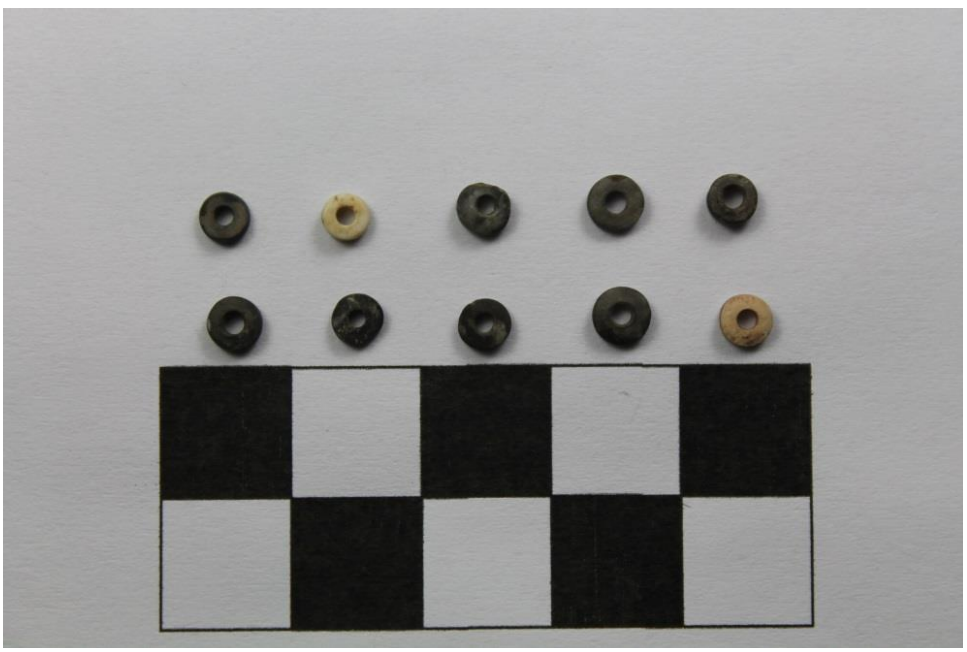


Figure 84: AC 1524-1888 (1988), Feature 4, Beads 11-20, Dorsal Side (scale in cm)

Figure 85: AC 1524-1888 (1988), Feature 4, Beads 11-20, Edge of Some Thick Beads (scale in cm)

Figure 86: AC 1524-1888 (1988), Feature 4, Unmeasured Beads (scale in cm)

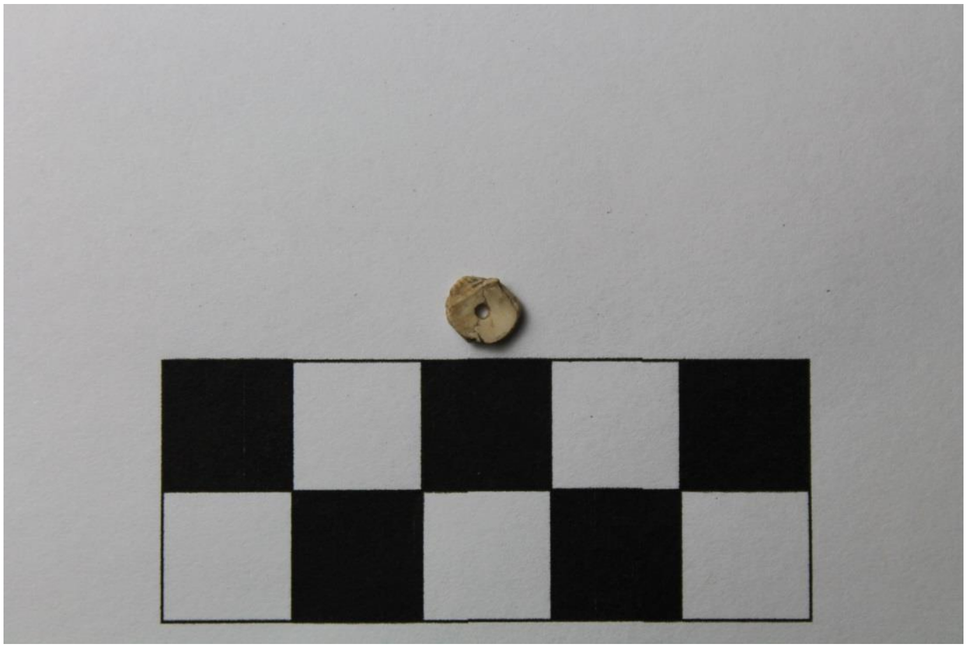


Figure 87: AC 1524-1953 (1988), Feature 3, Bead 1, Ventral Side (scale in cm)

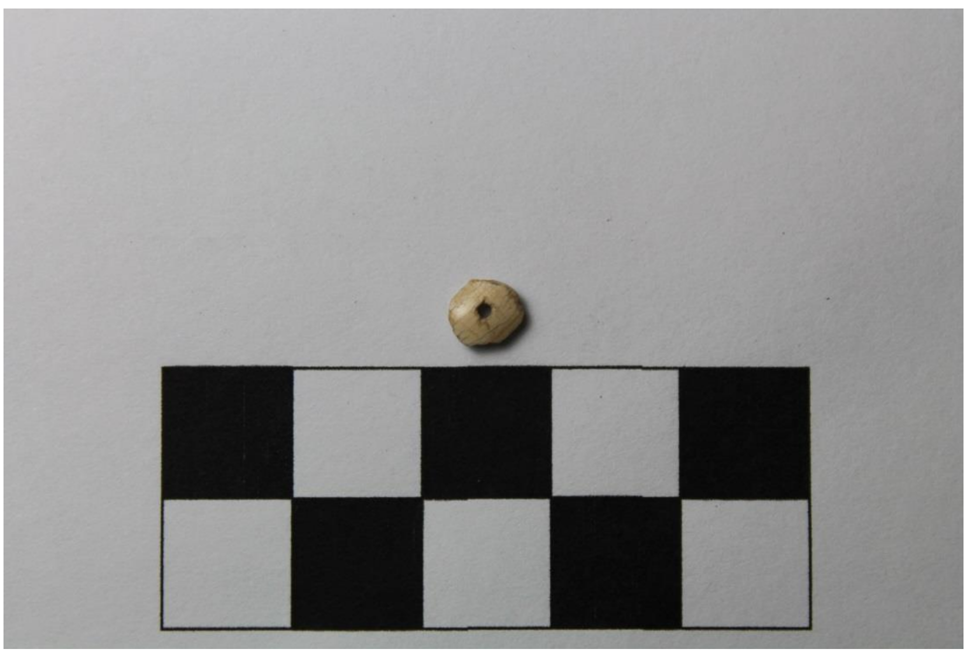


Figure 88: AC 1524-1953 (1988), Feature 3, Bead 1, Dorsal Side (scale in cm)

Figure 89: AC 1524-2357 (1988), Feature 30, Beads 1-3, Ventral Side (scale in cm)

Figure 90: AC 1524-2357 (1988), Feature 30, Beads 1-3, Dorsal Side (scale in cm)

Figure 91: AC 1524-2357 (1988), Feature 30, Unmeasured Beads (scale in cm)

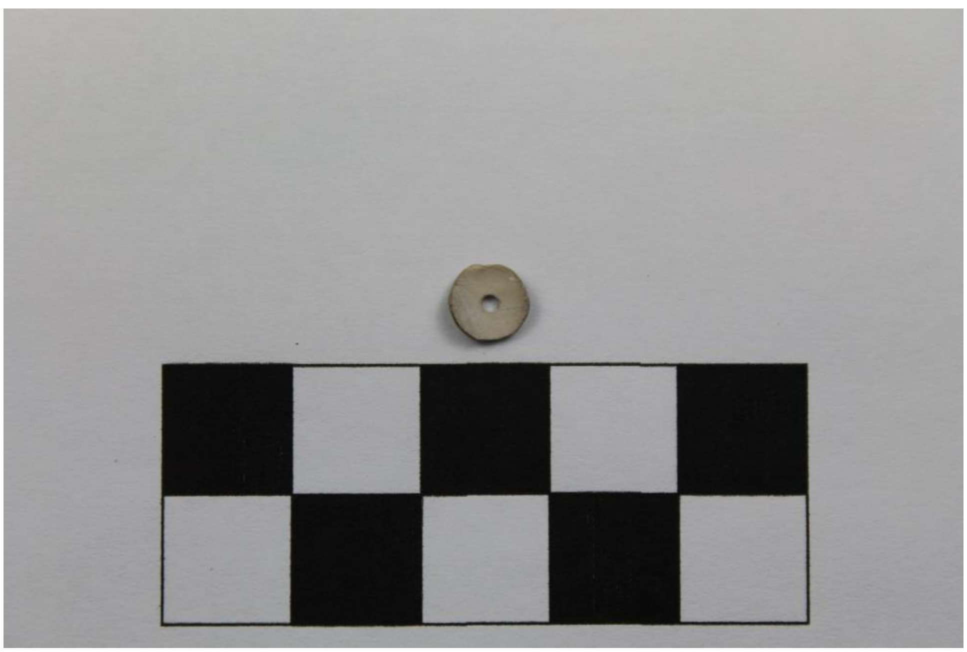


Figure 92: AC 1524-2359 (1988), Feature 30, Bead 1, Ventral Side (scale in cm)

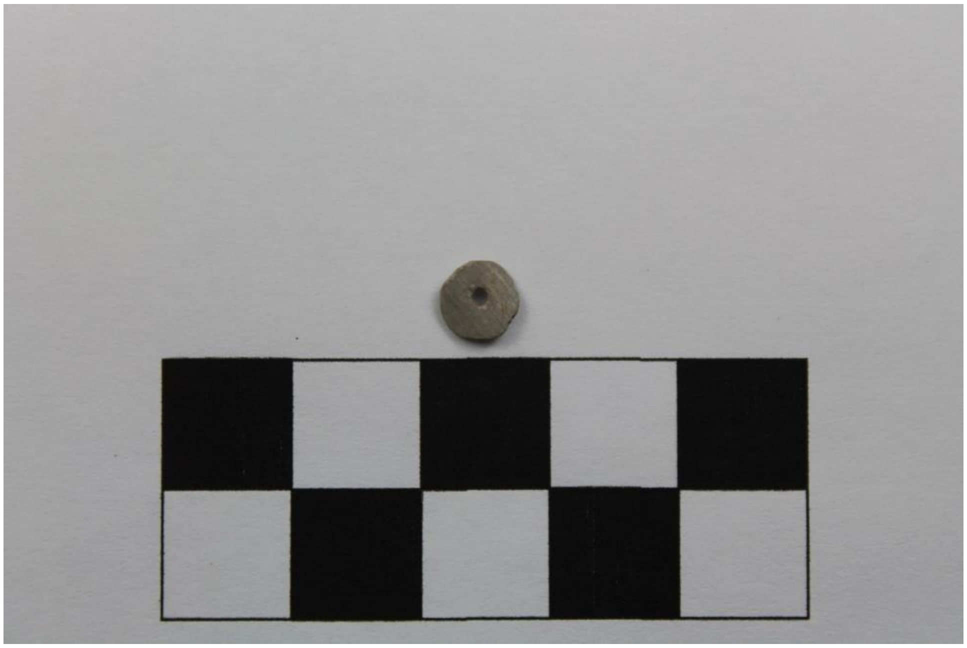


Figure 93: AC 1524-2359 (1988), Feature 30, Bead 1, Dorsal Side (scale in cm)

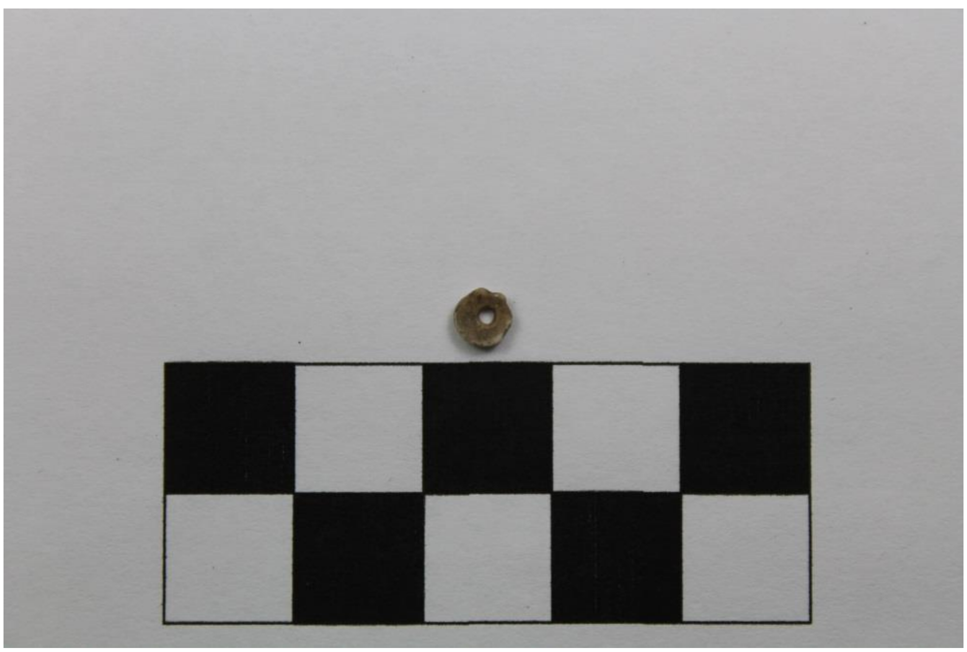


Figure 94: AC 1524-2370 (1988), Feature 30, Bead 1, Ventral Side (scale in cm)

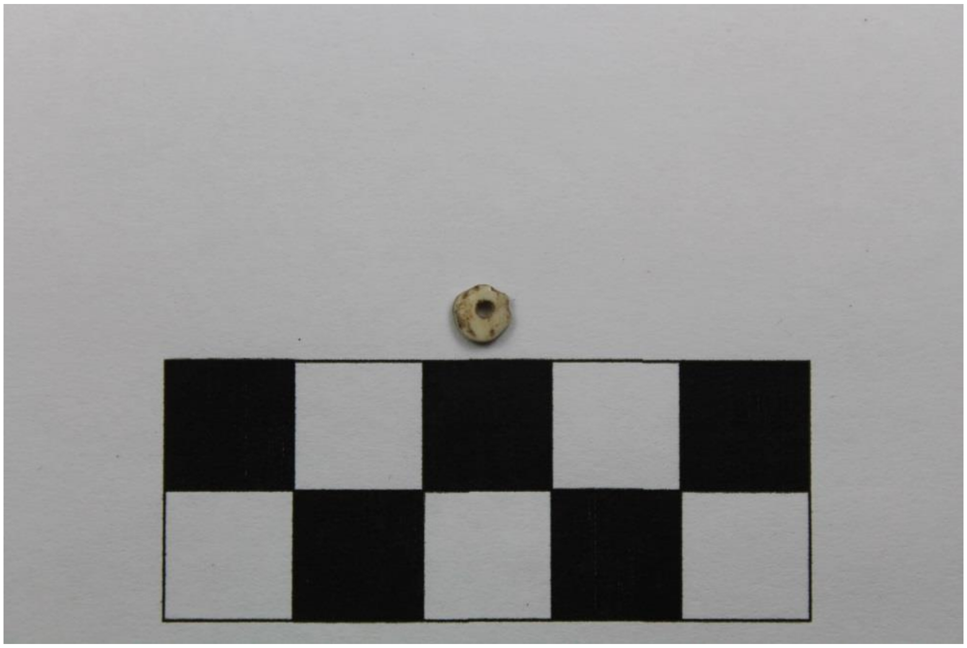


Figure 95: AC 1524-2370 (1988), Feature 30, Bead 1, Dorsal Side (scale in cm)

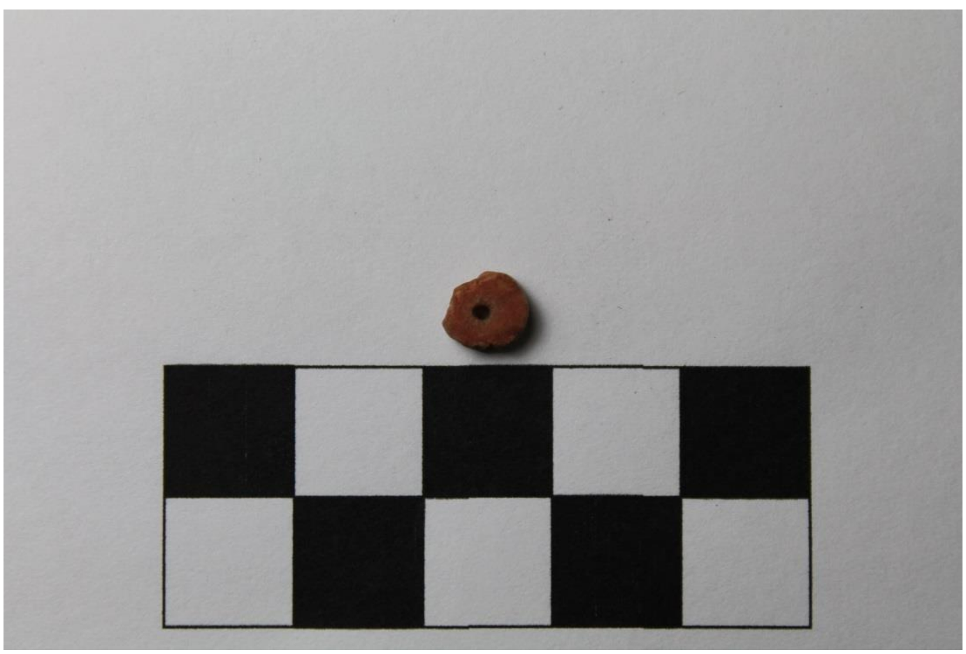


Figure 96: AC 1524-2400 (1988), Feature 39, Bead 1, First Side (scale in cm)

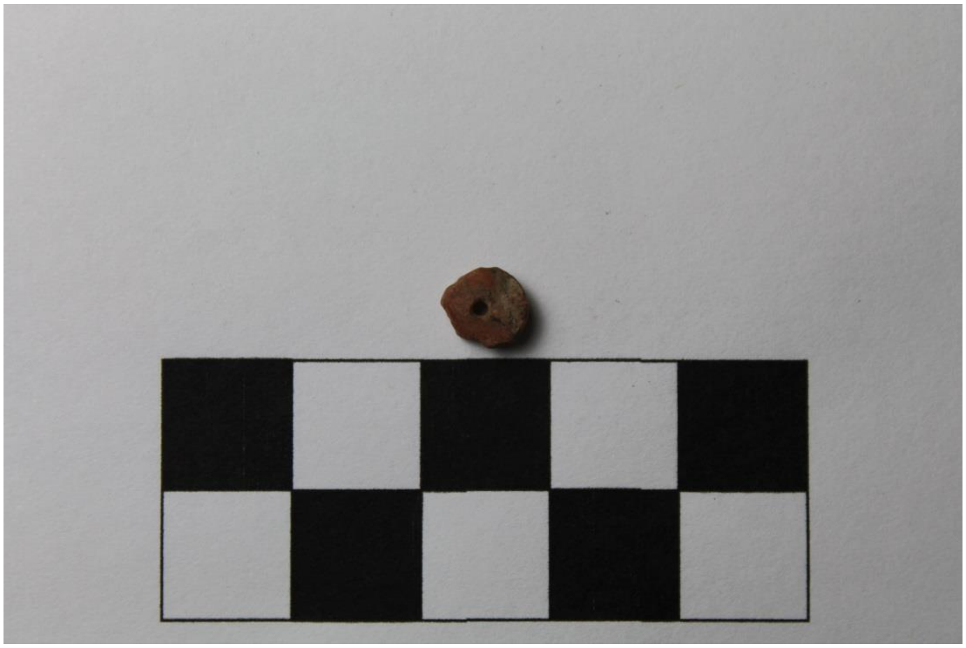


Figure 97: AC 1524-2400 (1988), Feature 39, Bead 1, Second Side (scale in cm)

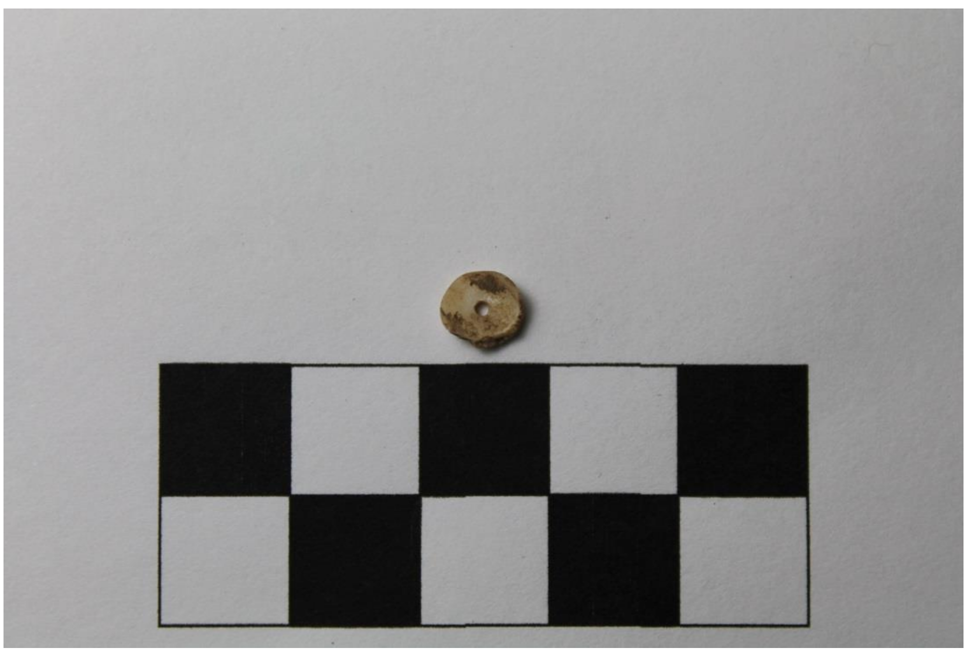


Figure 98: AC 1524-2401 (1988), Feature 39, Bead 1, Ventral Side (scale in cm)

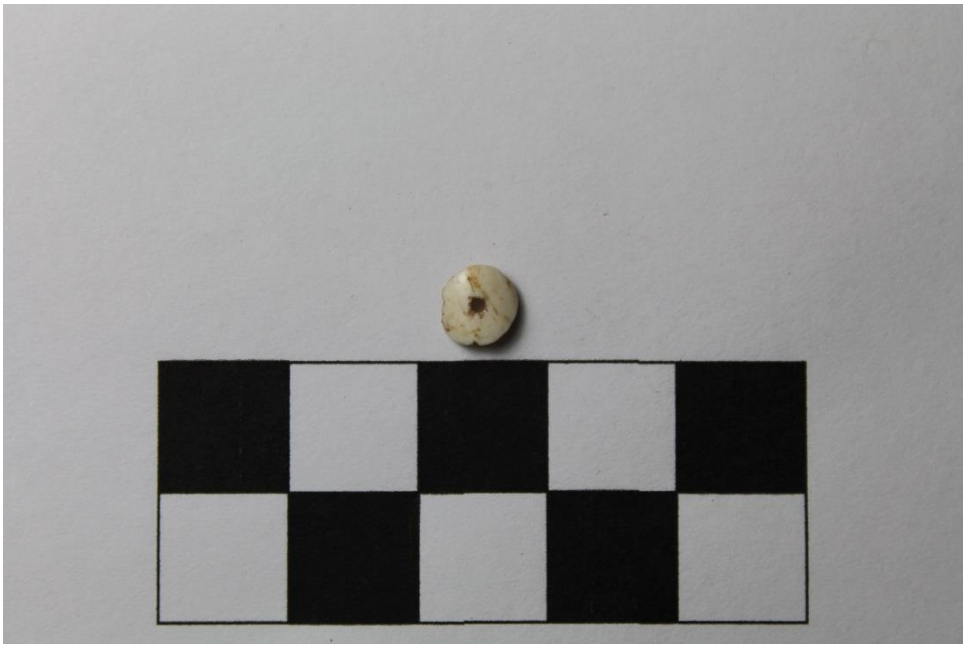


Figure 99: AC 1524-2401 (1988), Feature 39, Bead 1, Dorsal Side (scale in cm)

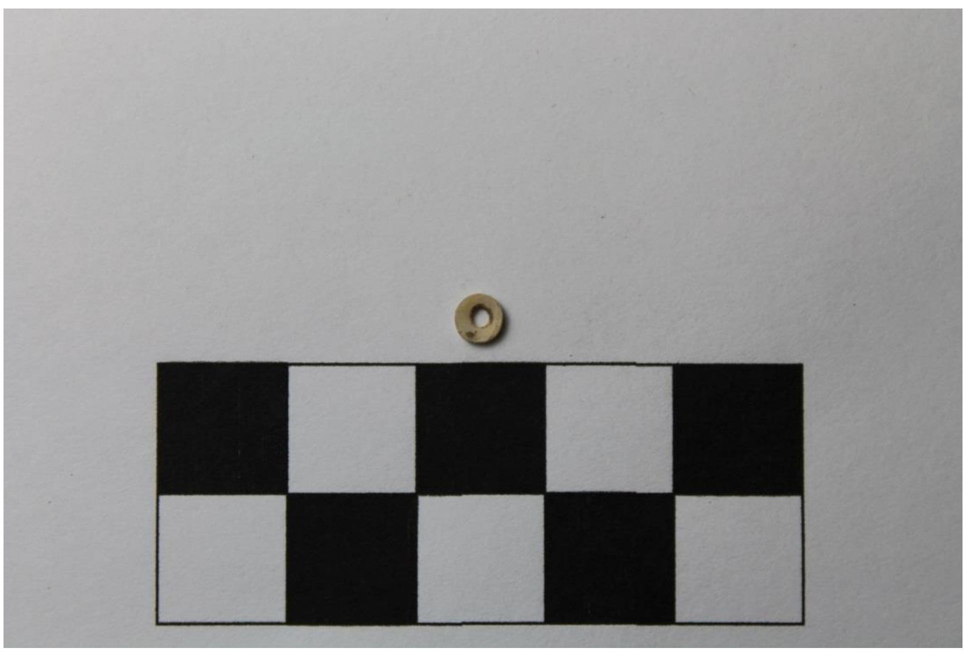


Figure 100: AC 1524-2417 (1988), Feature 41, Bead 1, Ventral Side (scale in cm)

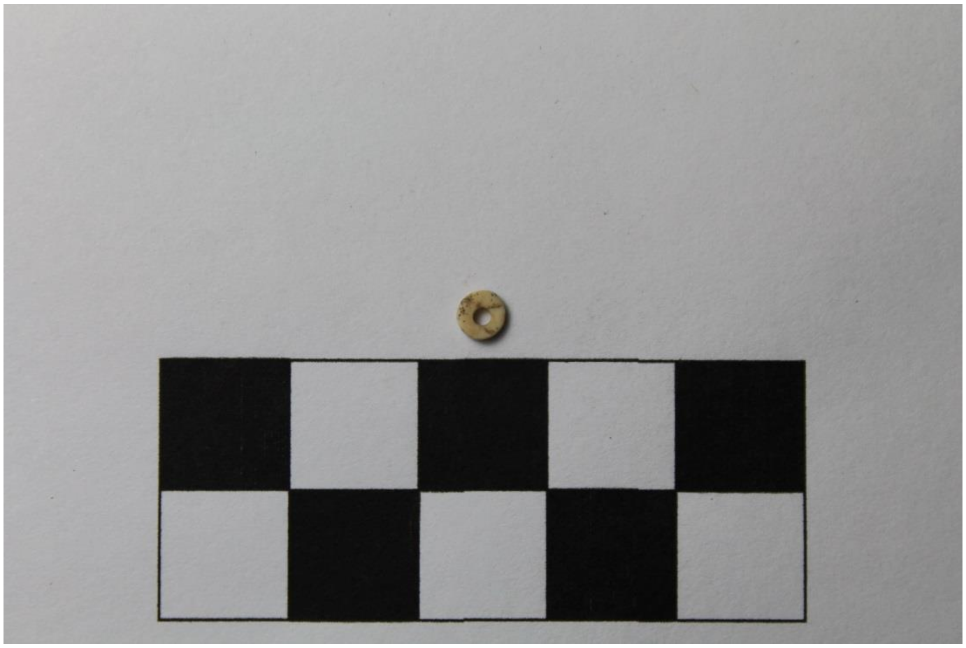


Figure 101: AC 1524-2417 (1988), Feature 41, Bead 1, Dorsal Side (scale in cm)

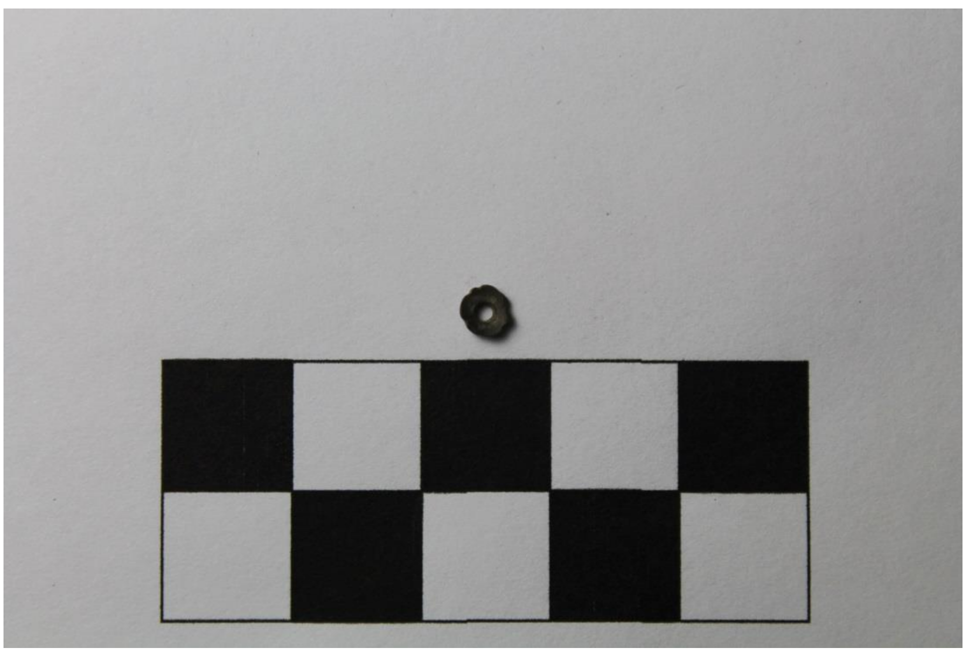


Figure 102: AC 1524-2421 (1988), Feature 41, Bead 1, Ventral Side (scale in cm)

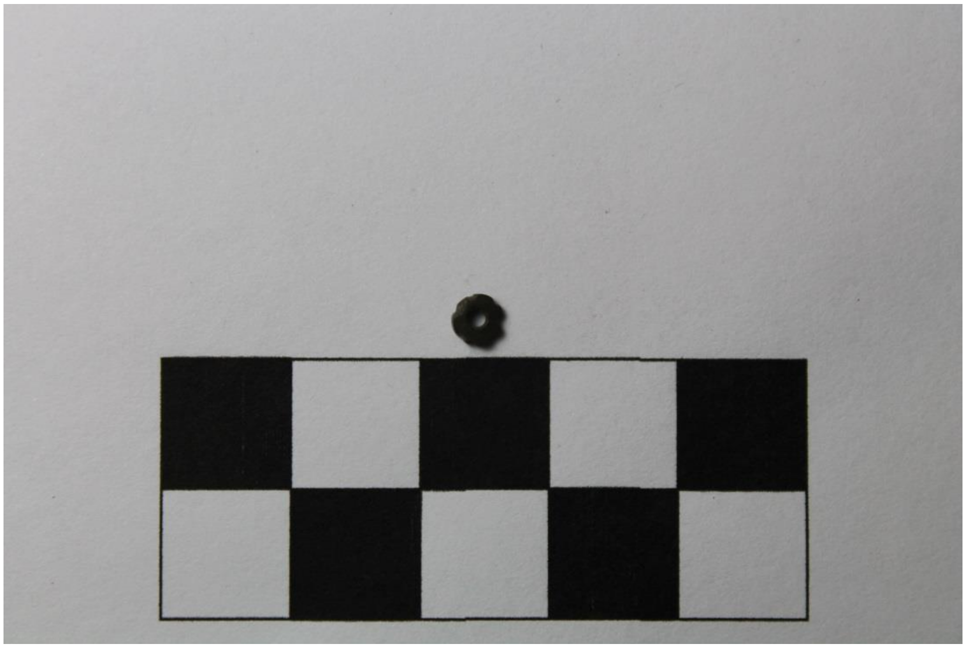


Figure 103: AC 1524-2421 (1988), Feature 41, Bead 1, Dorsal Side (scale in cm)

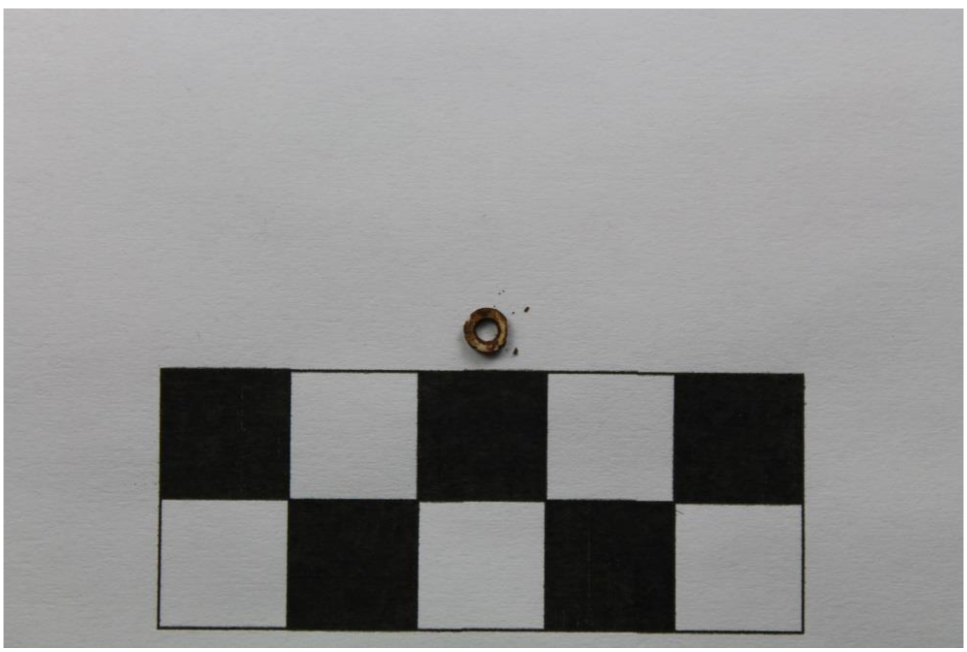


Figure 104: AC 1524-2582 (1988), Feature 24, Bead 1, Ventral Side (scale in cm)

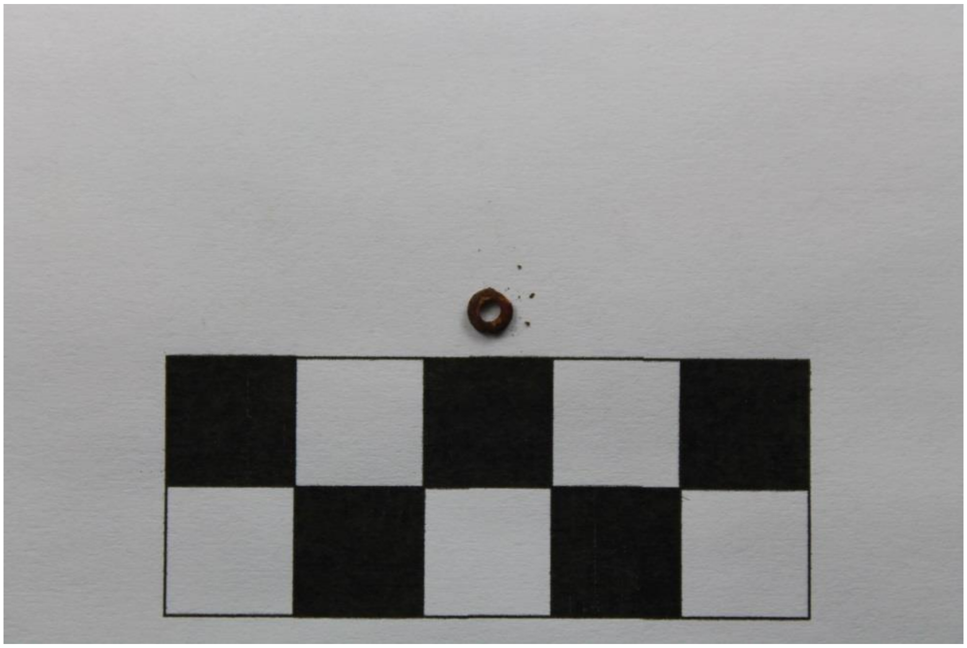


Figure 105: AC 1524-2582 (1988), Feature 24, Bead 1, Dorsal Side (scale in cm)

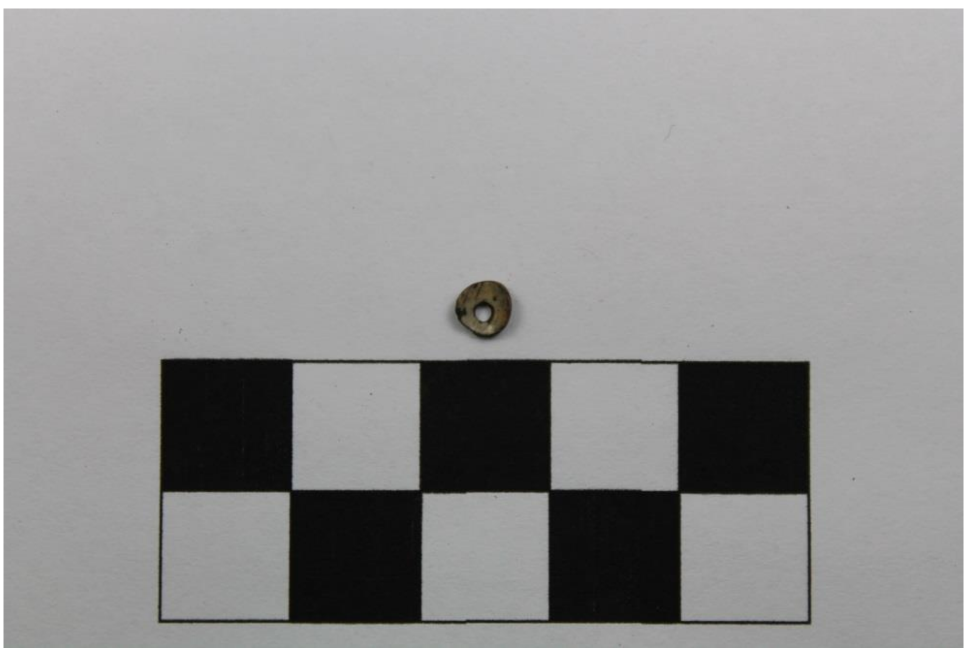


Figure 106: AC 1524-2592 (1988), Feature 67, Bead 1, Ventral Side (scale in cm)

Figure 107: AC 1524-2592 (1988), Feature 67, Bead 1, Dorsal Side (scale in cm)

Figure 108: AC 1524-2592 (1988), Feature 67, Unmeasured Beads (scale in cm)

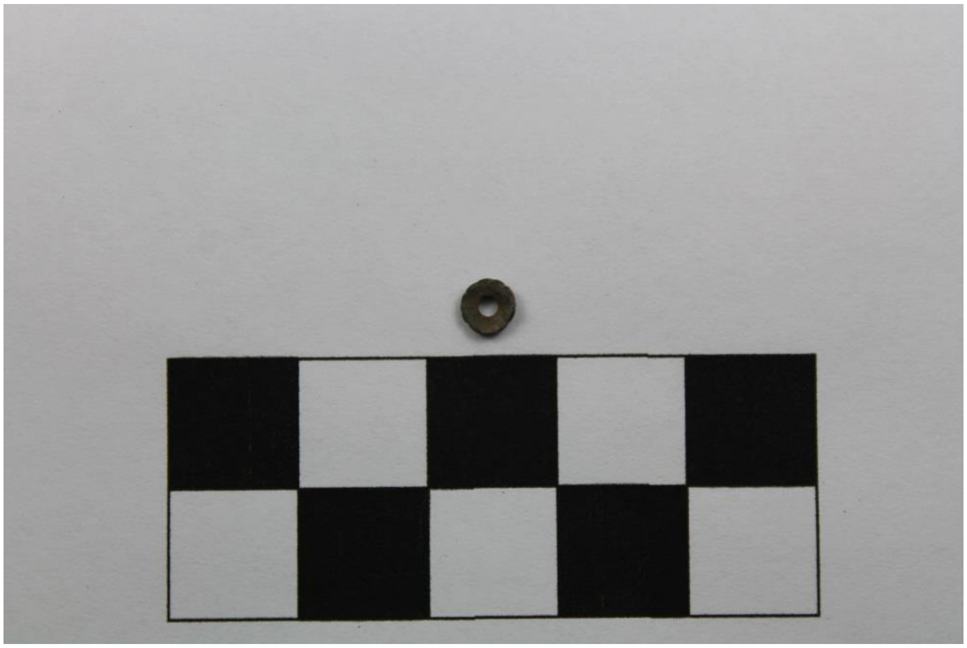


Figure 109: AC 1524-2593 (1988), Feature 67, Bead 1, Ventral Side (scale in cm)

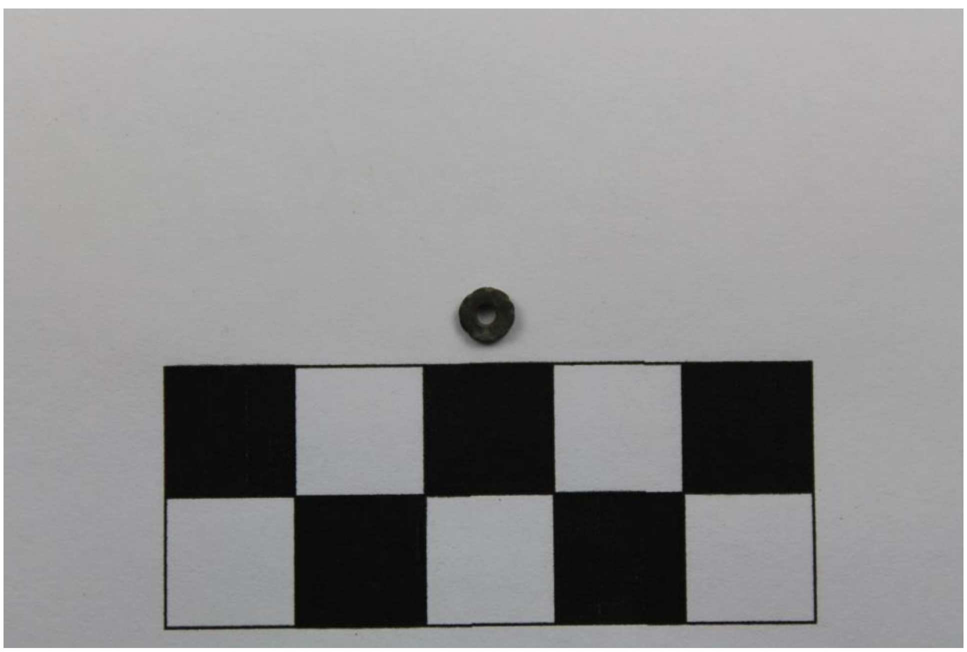


Figure 110: AC 1524-2593 (1988), Feature 67, Bead 1, Dorsal Side (scale in cm)

Figure 111: AC 1524-2809 (1988), Feature 21, Beads 1-2, First Side (scale in cm)

Figure 112: AC 1524-2809 (1988), Feature 21, Beads 1-2, Second Side (scale in cm)

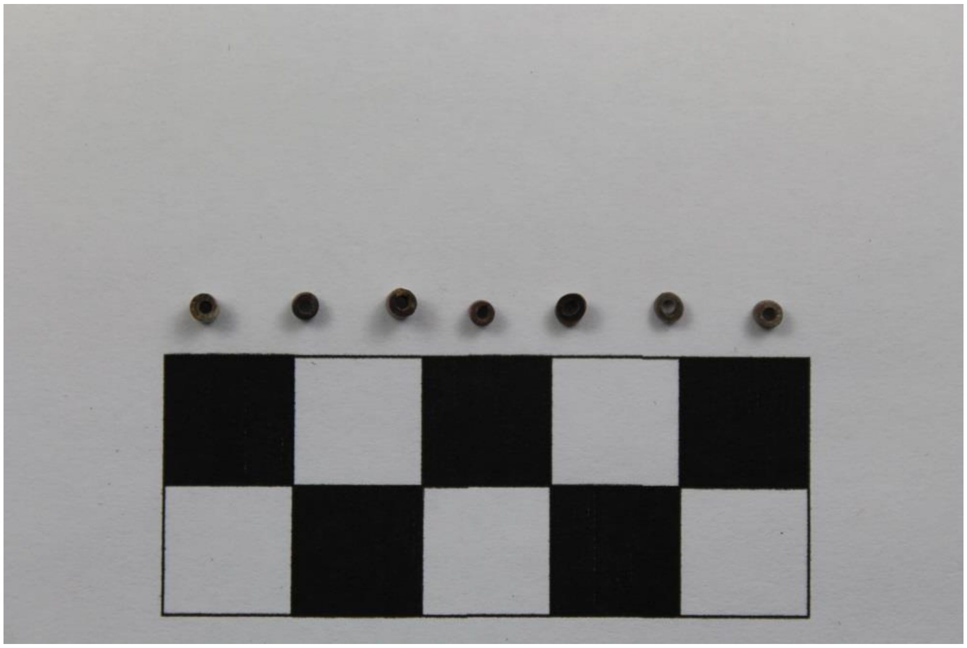


Figure 113: AC 1524-2811 (1988), Feature 21, Beads 1-7, First Side (scale in cm)

Figure 114: AC 1524-2811 (1988), Feature 21, Beads 1-7, Second Side (scale in cm)

Figure 115: AC 1524-2811 (1988), Feature 21, Beads 1-7, Edge of Thick Beads (scale in cm)

Figure 116: AC 1524-2811 (1988), Feature 21, Unmeasured Bead (scale in cm)

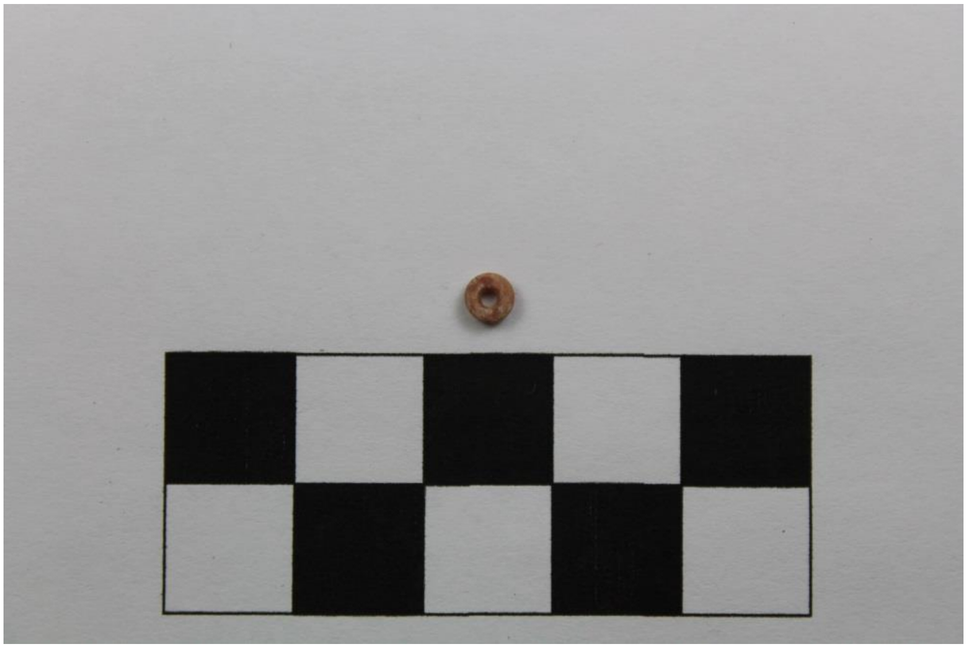


Figure 117: AC 1524-2812 (1988), Feature 21, Bead 1, First Side (scale in cm)

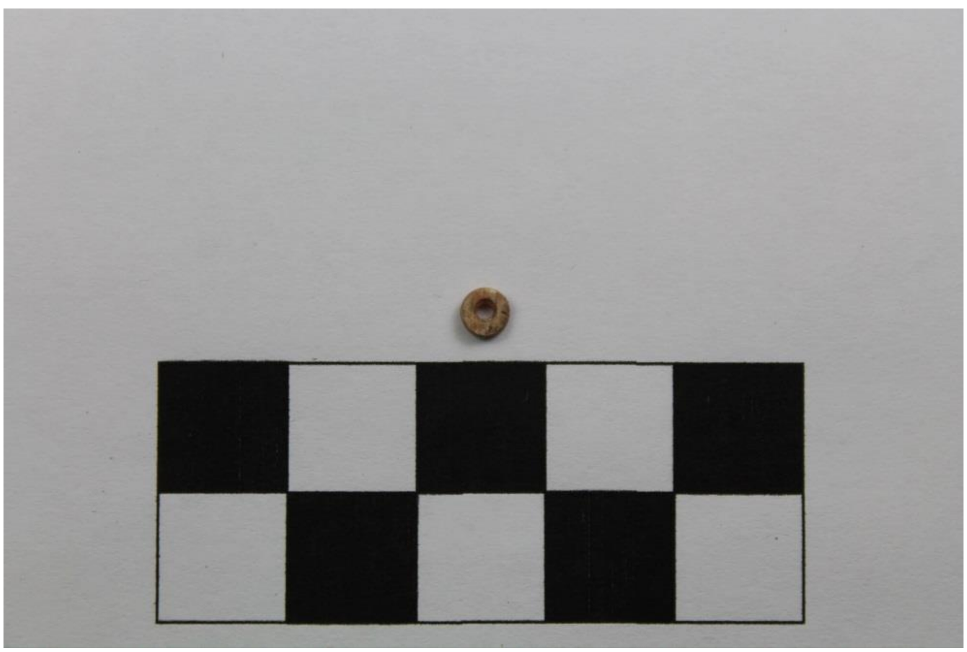


Figure 118: AC 1524-2812 (1988), Feature 21, Bead 1, Second Side (scale in cm)

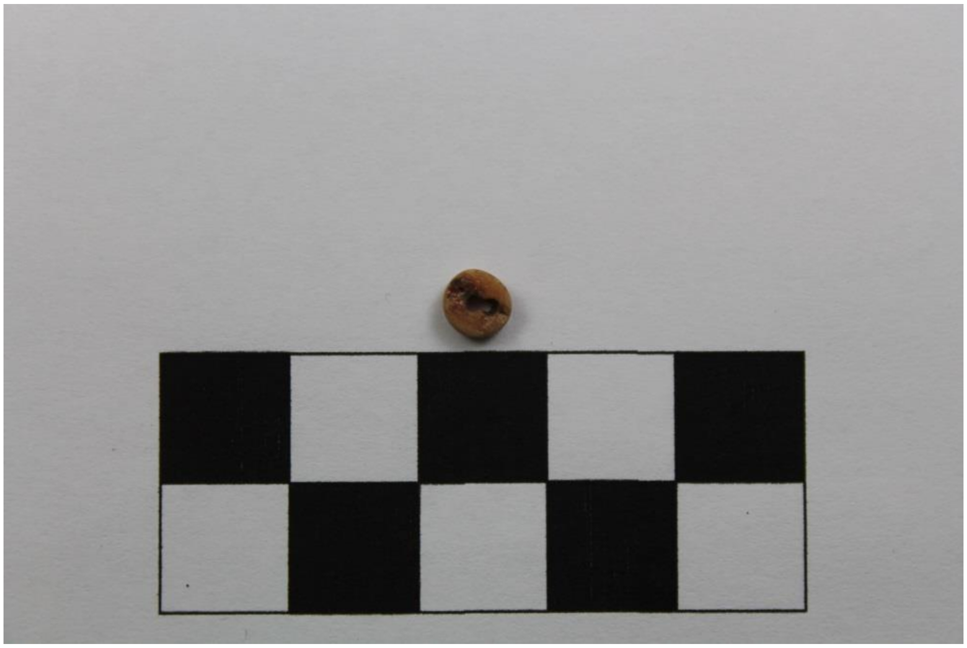


Figure 119: AC 1524-2880 (1988), Feature 27, Bead 1, First Side (scale in cm)

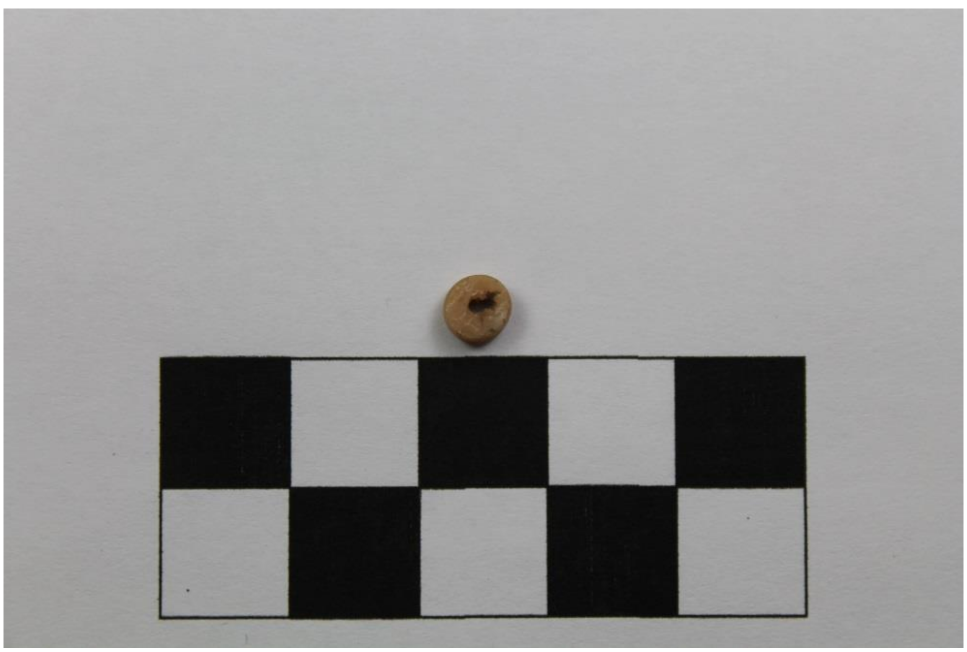


Figure 120: AC 1524-2880 (1988), Feature 27, Bead 1, Second Side (scale in cm)

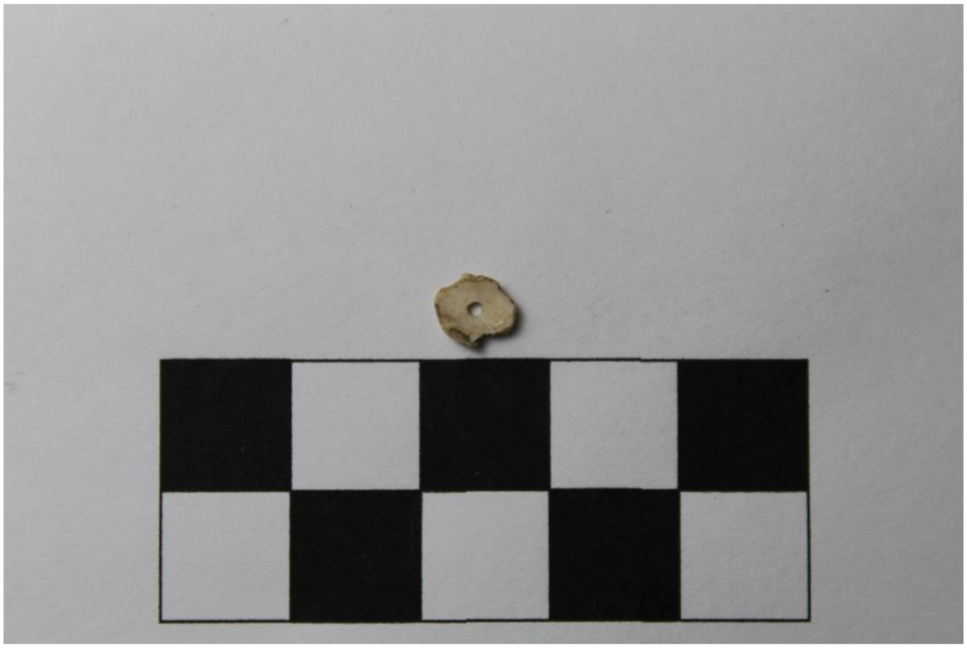


Figure 121: AC 1524-2891 (1988), Feature 31, Bead 1, Ventral Side (scale in cm)

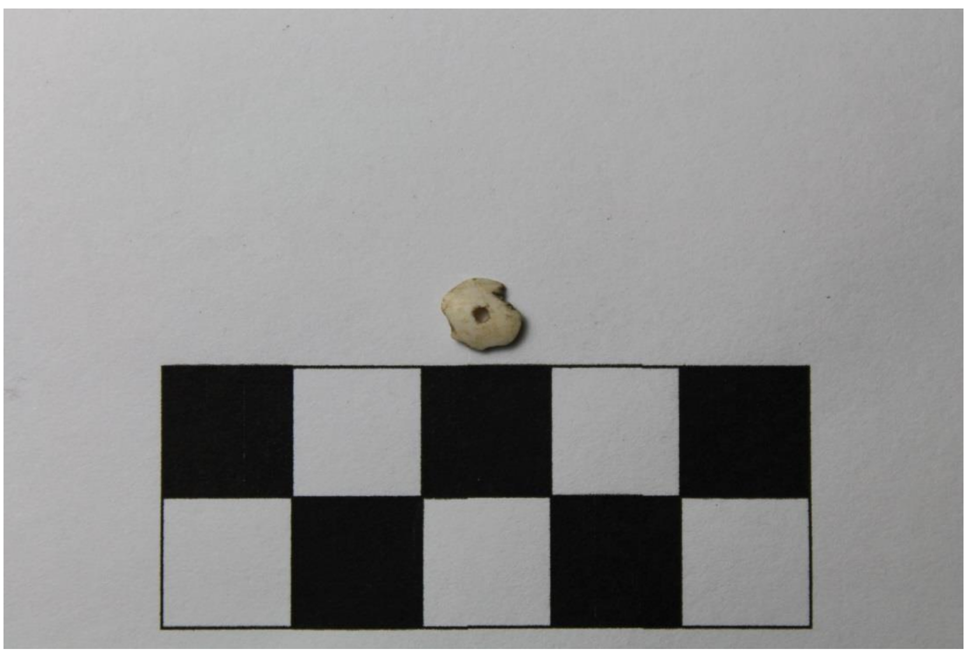


Figure 122: AC 1524-2891 (1988), Feature 31, Bead 1, Dorsal Side (scale in cm)

Figure 123: AC 1524-2918 (1988), Feature 44, Beads 1-10, Ventral Side (scale in cm)

Figure 124: AC 1524-2918 (1988), Feature 44, Beads 1-10, Dorsal Side (scale in cm)

Figure 125: AC 1524-2918 (1988), Feature 44, Beads 1-10, Edge of Some Thick Beads (scale in cm)

Figure 126: AC 1524-2918 (1988), Feature 44, Beads 11-20, Ventral Side (scale in cm)

Figure 127: AC 1524-2918 (1988), Feature 44, Beads 11-20, Dorsal Side (scale in cm)

Figure 128: AC 1524-2918 (1988), Feature 44, Beads 11-20, Edge of Some Thick Beads (scale in cm)

Figure 129: AC 1524-2918 (1988), Feature 44, Beads 21-24, Ventral Side (scale in cm)

Figure 130: AC 1524-2918 (1988), Feature 44, Beads 21-24, Dorsal Side (scale in cm)

Figure 131: AC 1524-2918 (1988), Feature 44, Beads 21-24, Edge of Some Thick Beads (scale in cm)

Figure 132: AC 1524-2918 (1988), Feature 44, Unmeasured Beads (scale in cm)

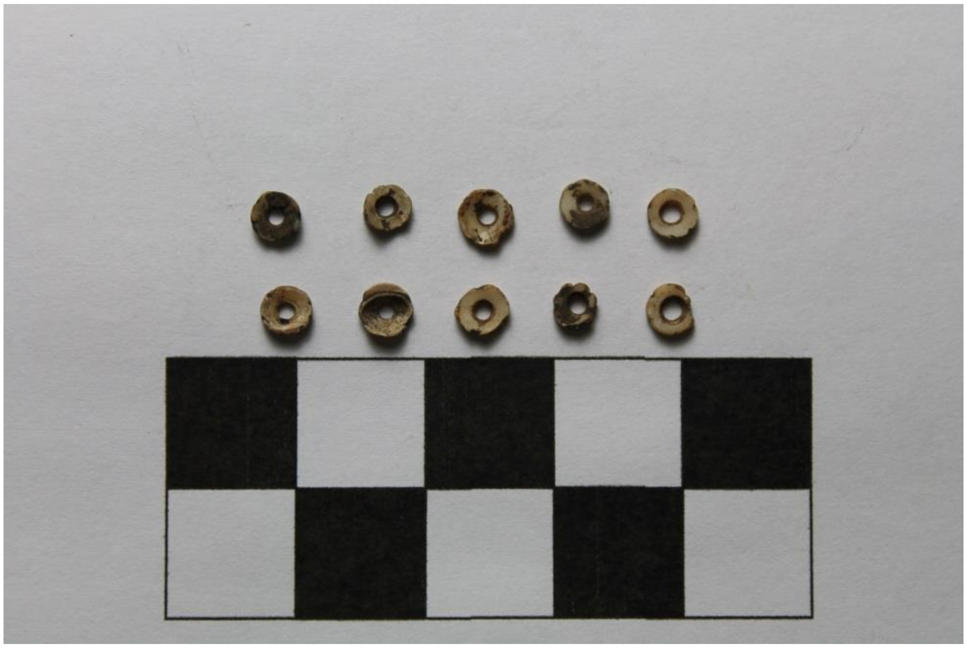


Figure 133: AC 1524-2919 (1988), Feature 44, Beads 1-10, Ventral Side (scale in cm)

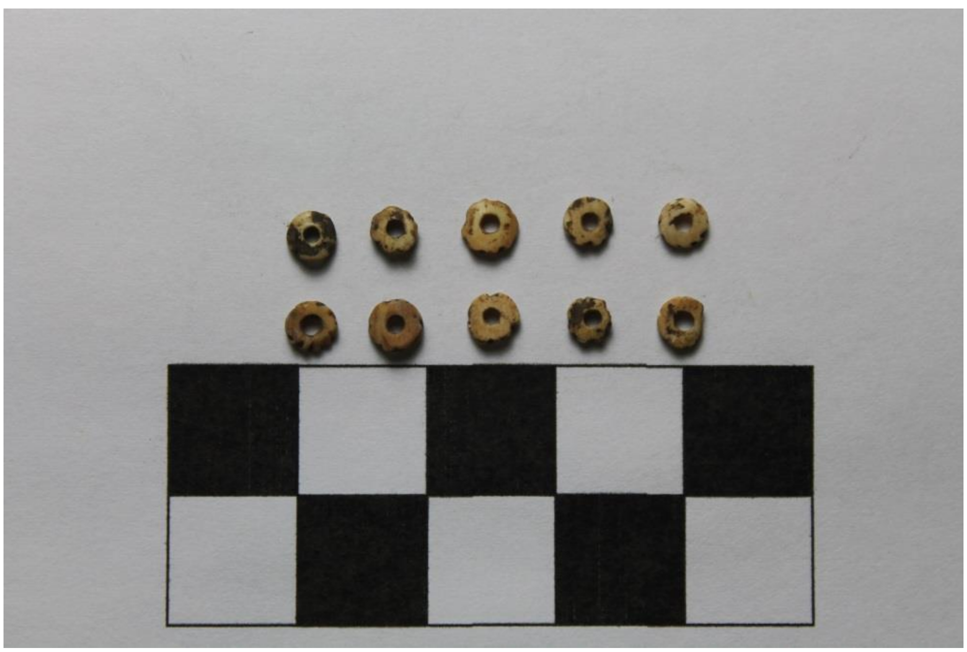


Figure 134: AC 1524-2919 (1988), Feature 44, Beads 1-10, Dorsal Side (scale in cm)

Figure 135: AC 1524-2919 (1988), Feature 44, Beads 11-20, Ventral Side (scale in cm)

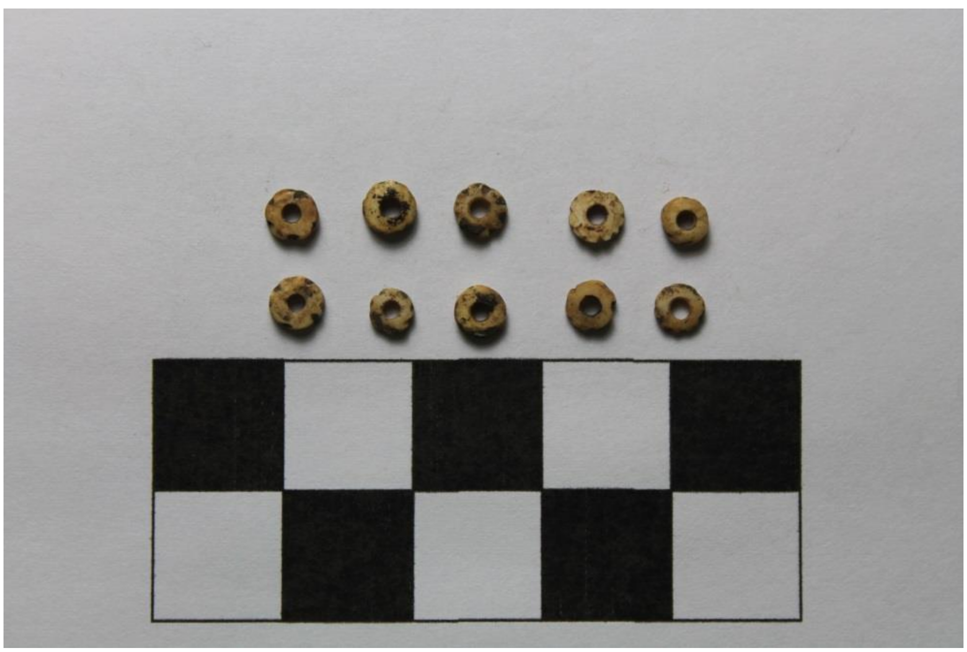


Figure 136: AC 1524-2919 (1988), Feature 44, Beads 11-20, Dorsal Side (scale in cm)

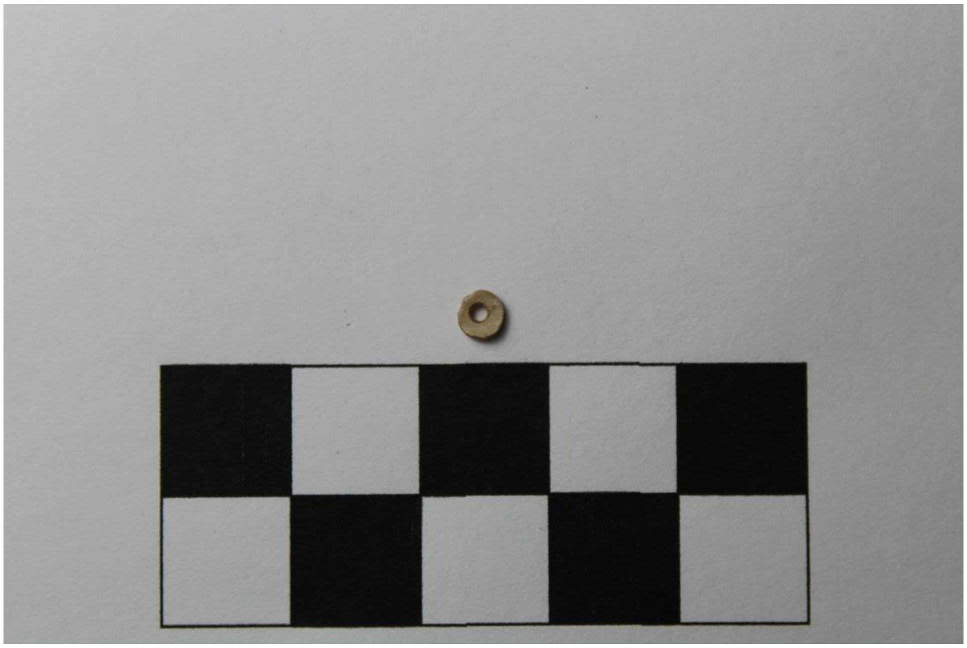


Figure 137: AC 1524-2920 (1988), Feature 44, Bead 1, Ventral Side (scale in cm)

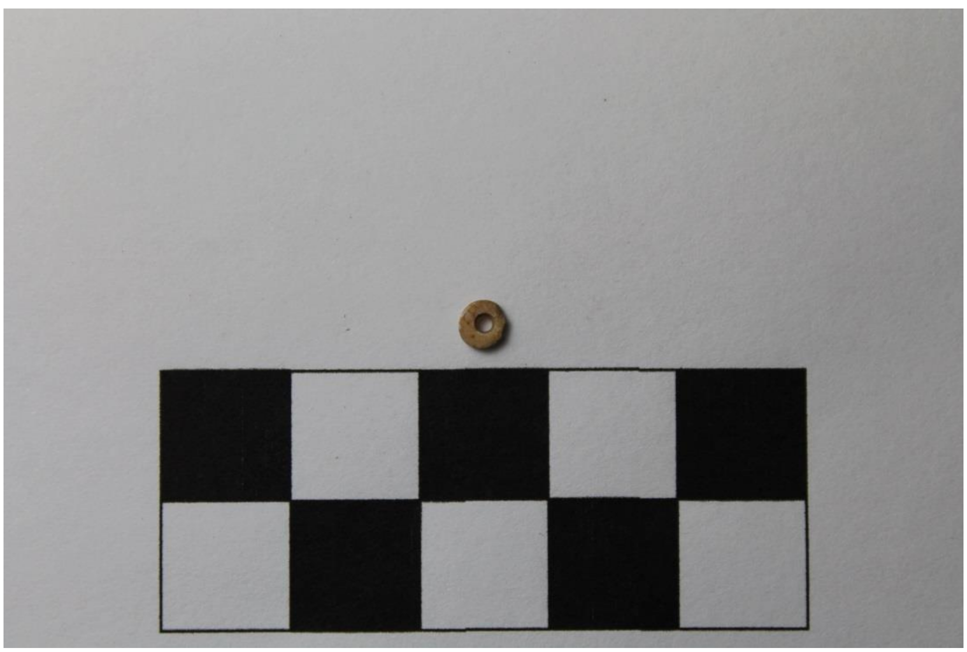


Figure 138: AC 1524-2920 (1988), Feature 44, Bead 1, Dorsal Side (scale in cm)

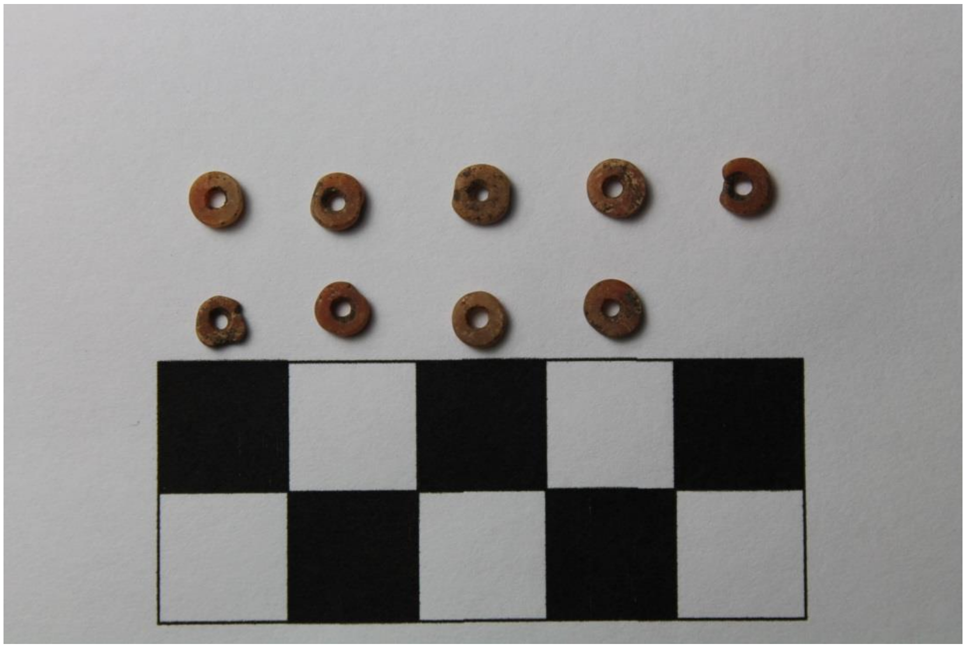


Figure 139: AC 1524-2921 (1988), Feature 44, Beads 1-9, First Side (scale in cm)

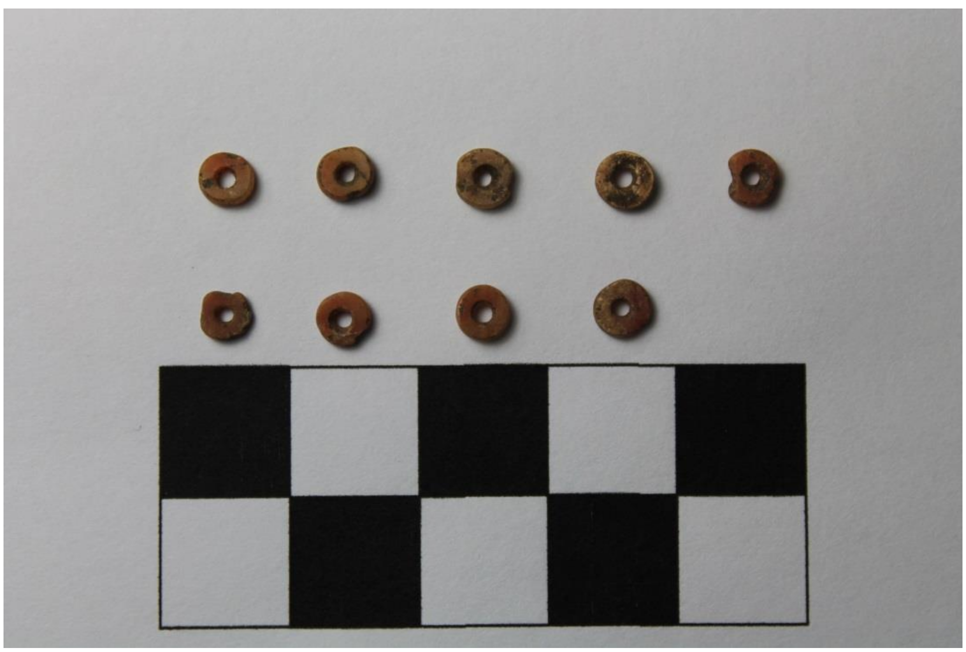


Figure 140: AC 1524-2921 (1988), Feature 44, Beads 1-9, Second Side (scale in cm)

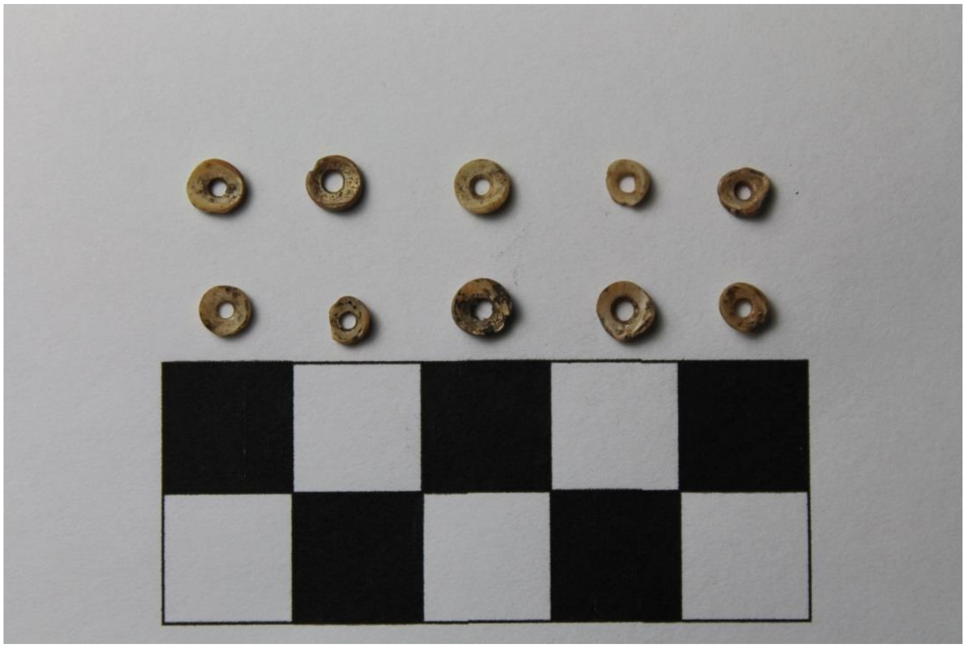


Figure 141: AC 1524-2922 (1988), Feature 44, Beads 1-10, Ventral Side (scale in cm)

Figure 142: AC 1524-2922 (1988), Feature 44, Beads 1-10, Dorsal Side (scale in cm)

Figure 143: AC 1524-2922 (1988), Feature 44, Beads 11-13, Ventral Side (scale in cm)

Figure 144: AC 1524-2922 (1988), Feature 44, Beads 11-13, Dorsal Side (scale in cm)

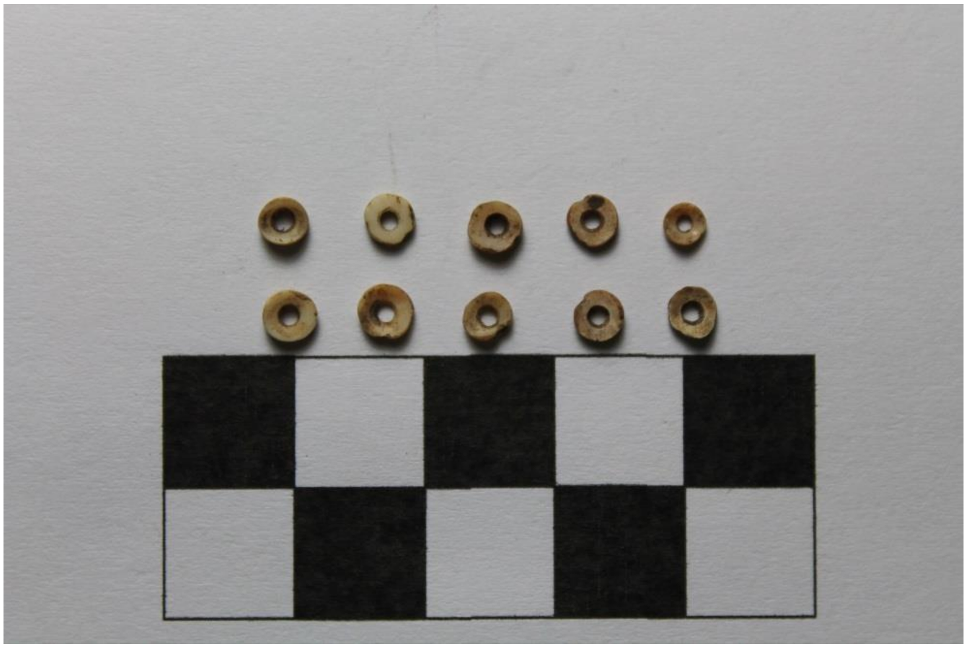


Figure 145: AC 1524-2923 (1988), Feature 44, Beads 1-10, Ventral Side (scale in cm)

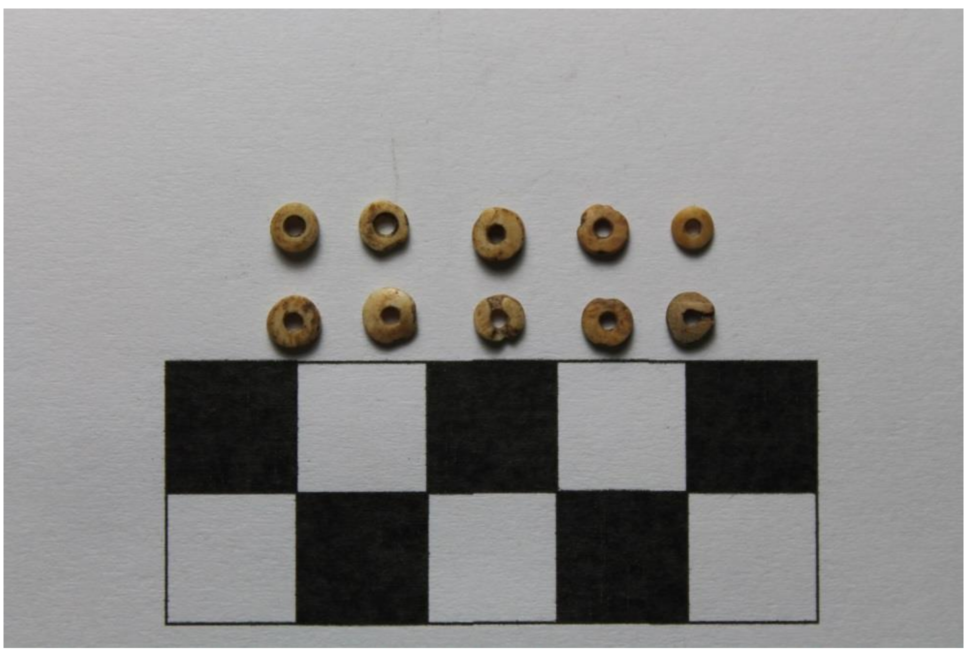


Figure 146: AC 1524-2923 (1988), Feature 44, Beads 1-10, Dorsal Side (scale in cm)

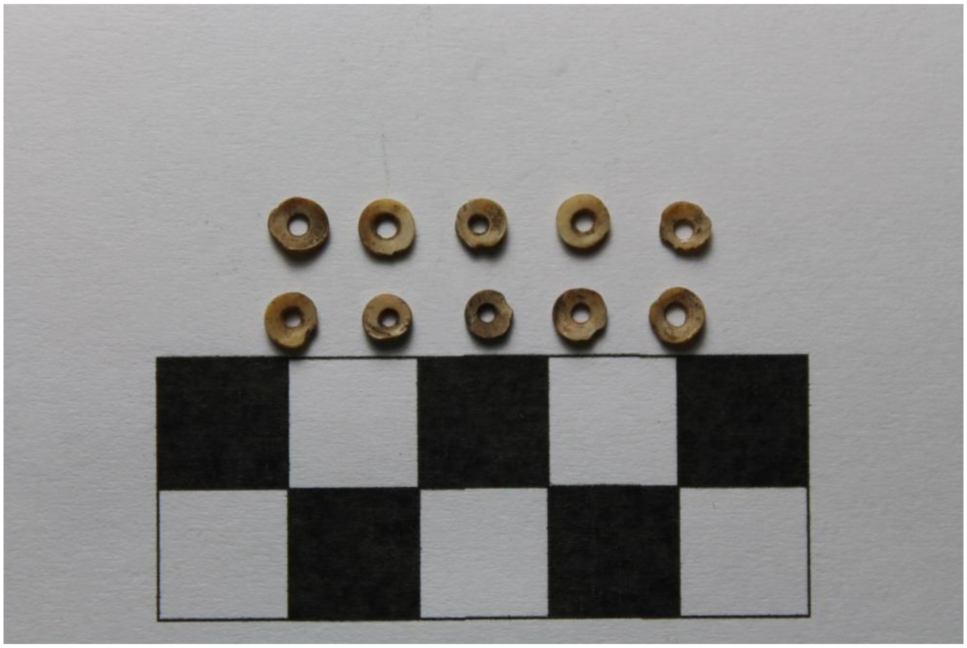


Figure 147: AC 1524-2923 (1988), Feature 44, Beads 11-20, Ventral Side (scale in cm)

Figure 148: AC 1524-2923 (1988), Feature 44, Beads 11-20, Dorsal Side (scale in cm)

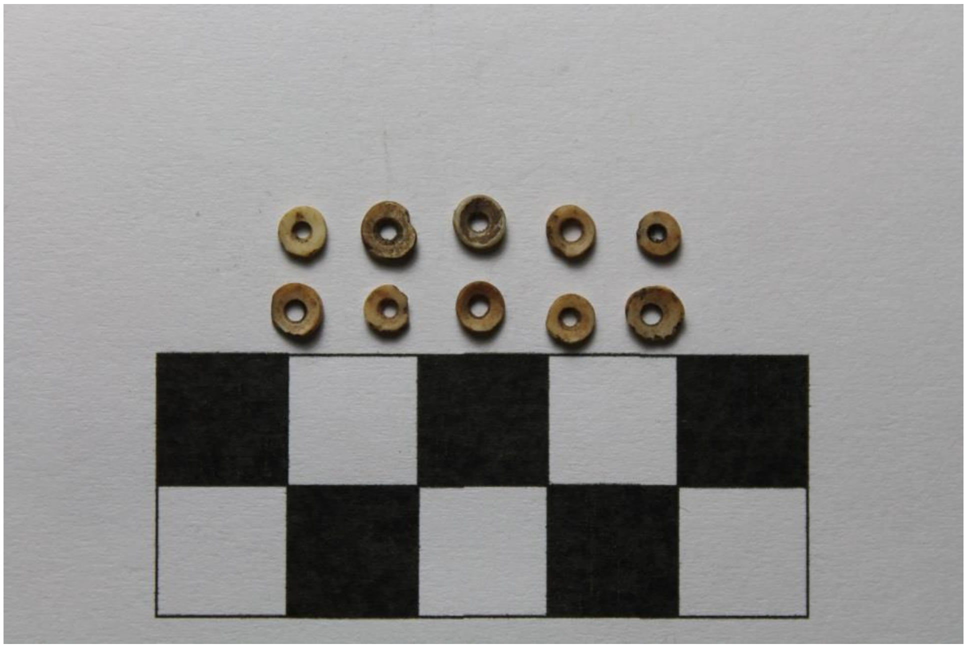


Figure 149: AC 1524-2923 (1988), Feature 44, Beads 21-30, Ventral Side (scale in cm)

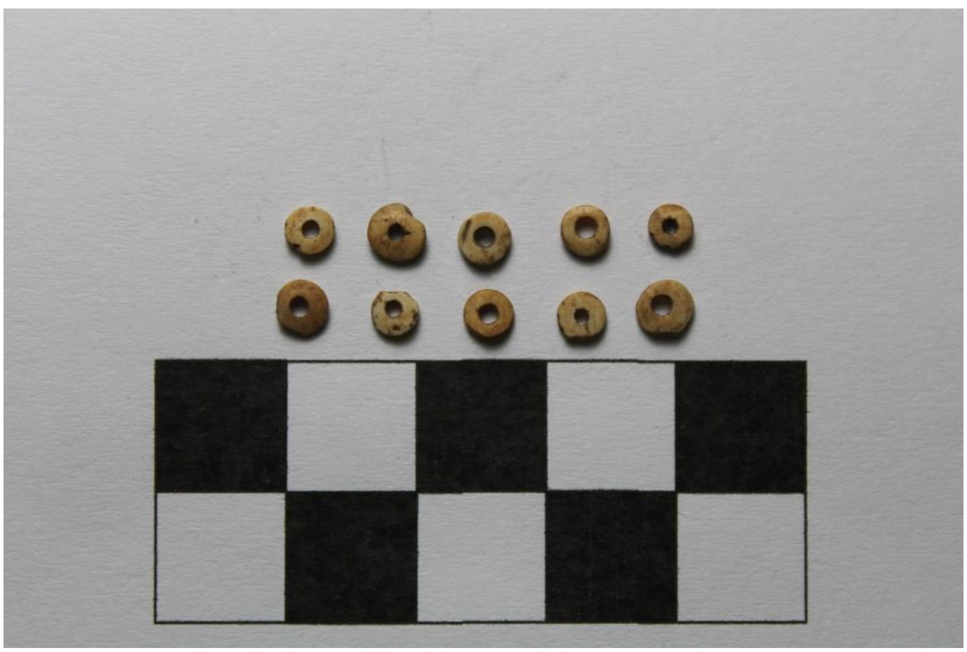


Figure 150: AC 1524-2923 (1988), Feature 44, Beads 21-30, Dorsal Side (scale in cm)

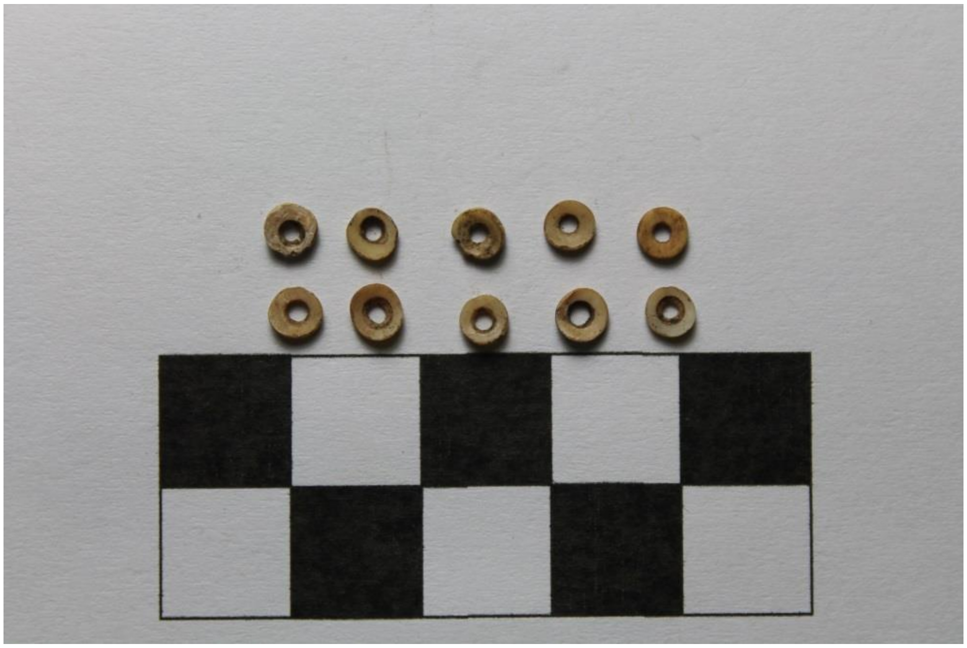


Figure 151: AC 1524-2923 (1988), Feature 44, Beads 31-40, Ventral Side (scale in cm)

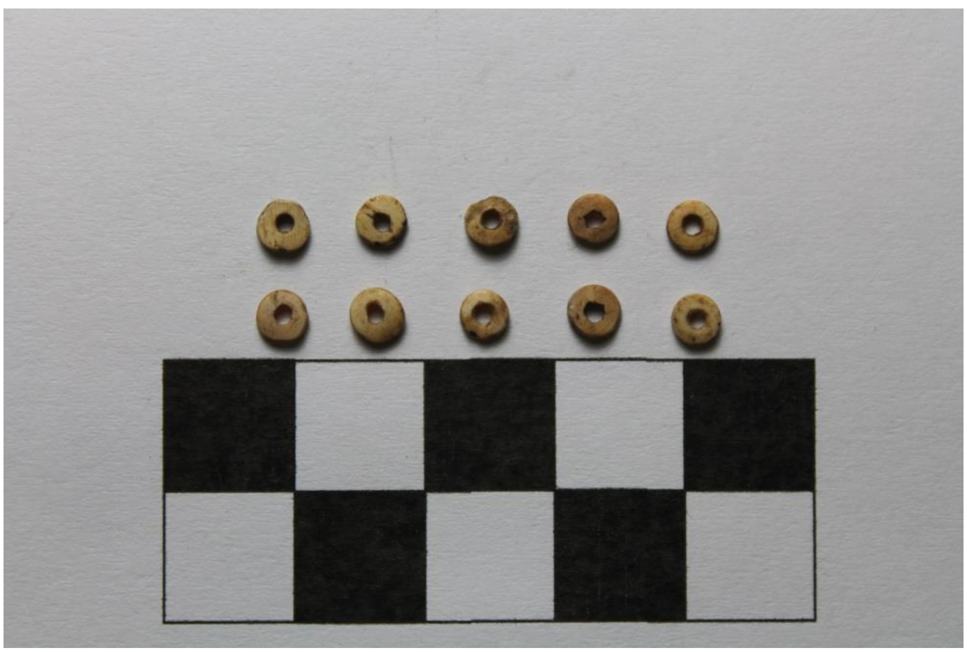


Figure 152: AC 1524-2923 (1988), Feature 44, Beads 31-40, Dorsal Side (scale in cm)

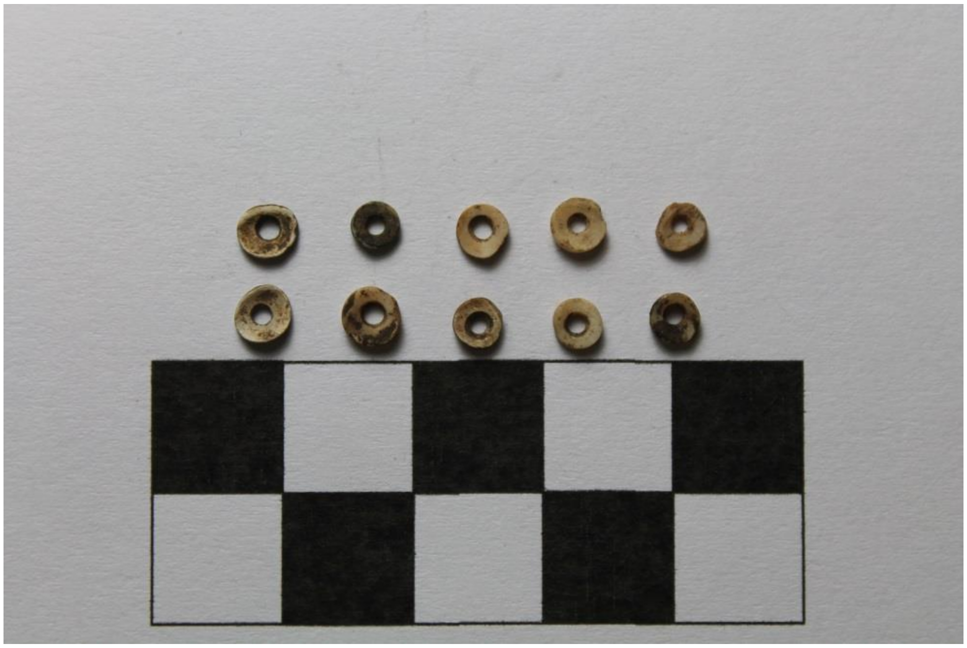


Figure 153: AC 1524-2923 (1988), Feature 44, Beads 41-50, Ventral Side (scale in cm)

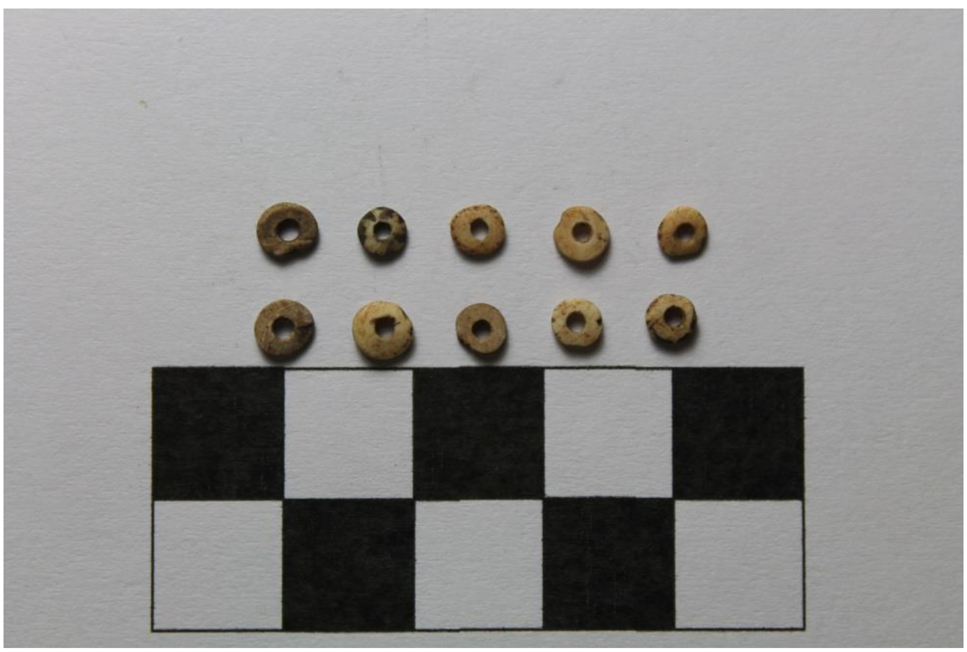


Figure 154: AC 1524-2923 (1988), Feature 44, Beads 41-50, Dorsal Side (scale in cm)

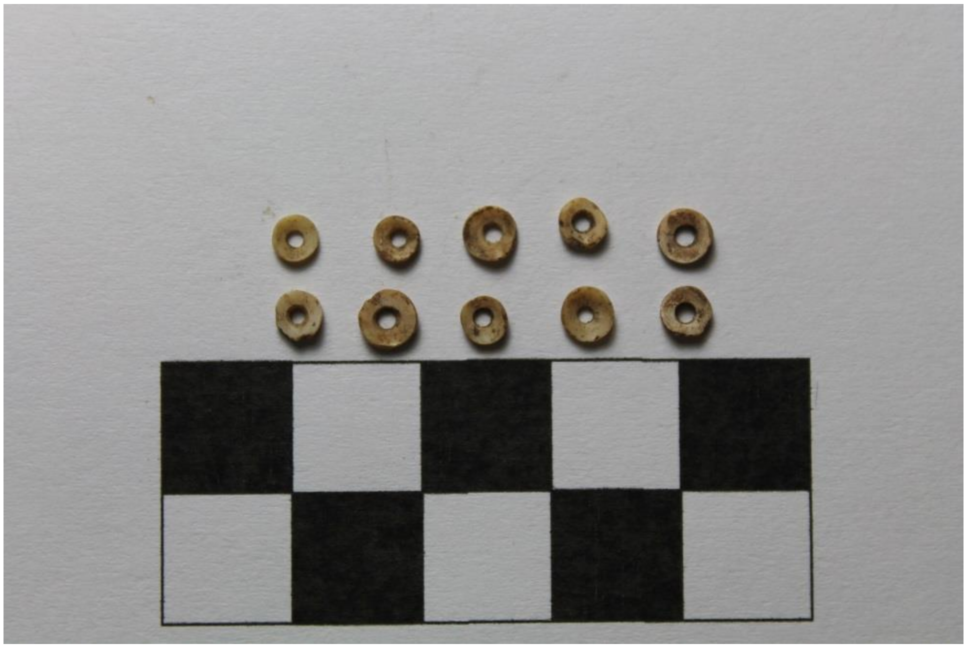


Figure 155: AC 1524-2923 (1988), Feature 44, Beads 51-60, Ventral Side (scale in cm)

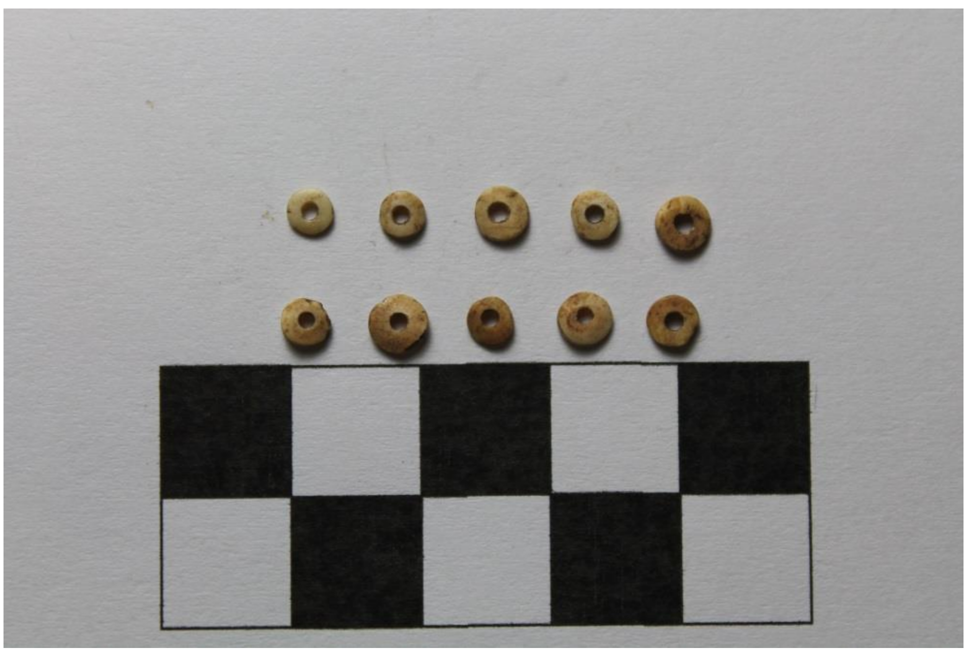


Figure 156: AC 1524-2923 (1988), Feature 44, Beads 51-60, Dorsal Side (scale in cm)

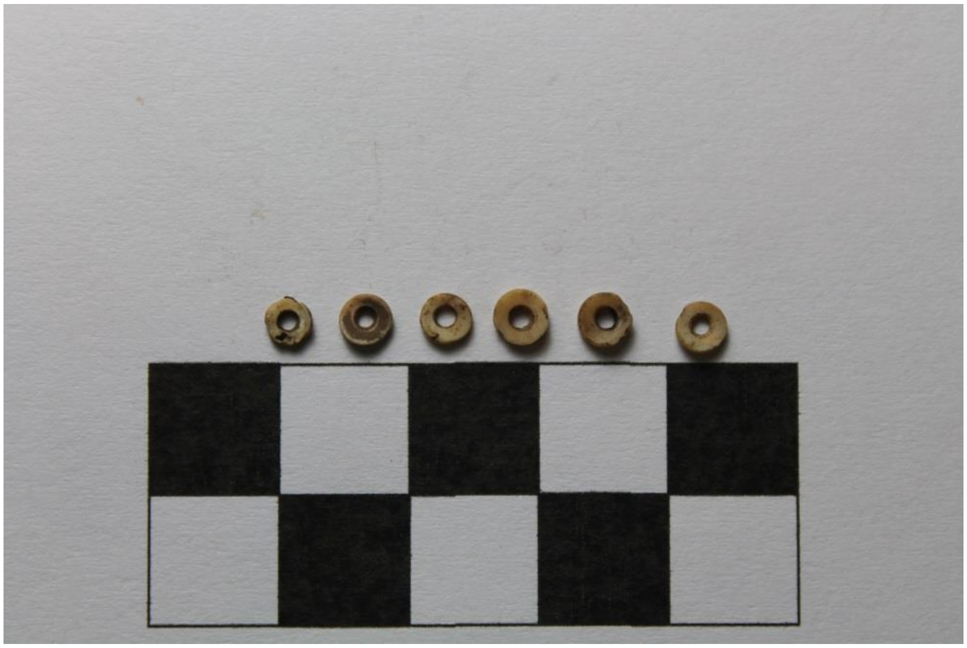


Figure 157: AC 1524-2923 (1988), Feature 44, Beads 61-66, Ventral Side (scale in cm)

Figure 158: AC 1524-2923 (1988), Feature 44, Beads 61-66, Dorsal Side (scale in cm)

Figure 159: AC 1524-2923 (1988), Feature 44, Unmeasured Beads (scale in cm)

Figure 160: AC 1524-2923 (1988), Feature 44, Unmeasured Beads (scale in cm)

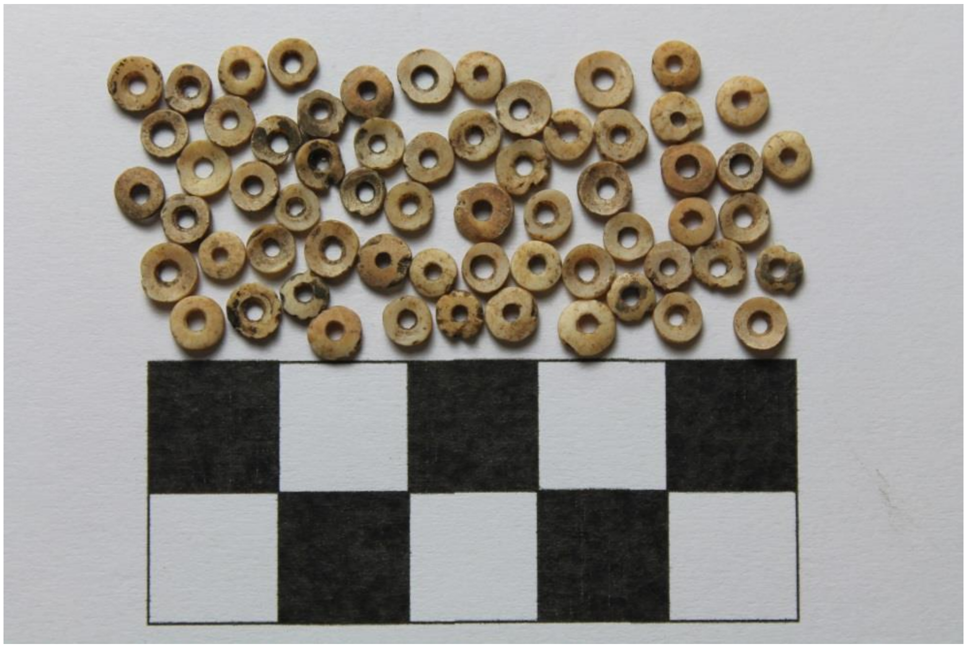


Figure 161: AC 1524-2923 (1988), Feature 44, Unmeasured Beads (scale in cm)

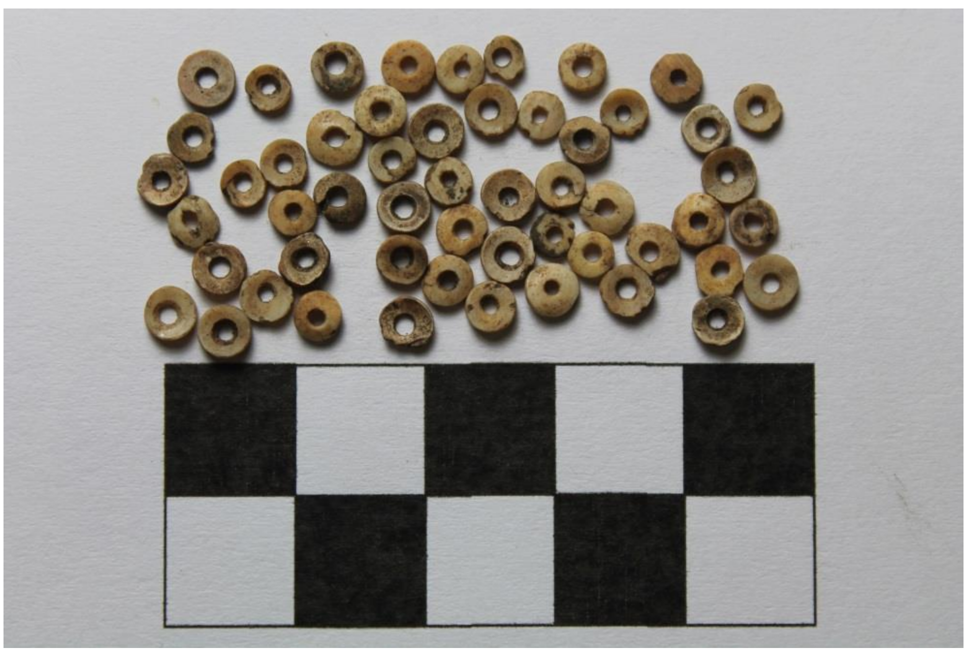


Figure 162: AC 1524-2923 (1988), Feature 44, Unmeasured Beads (scale in cm)

Figure 163: AC 1524-2923 (1988), Feature 44, Unmeasured Beads (scale in cm)

Figure 164: AC 1524-2932 (1988), Feature 39, Bead 1, Ventral Side (scale in cm)

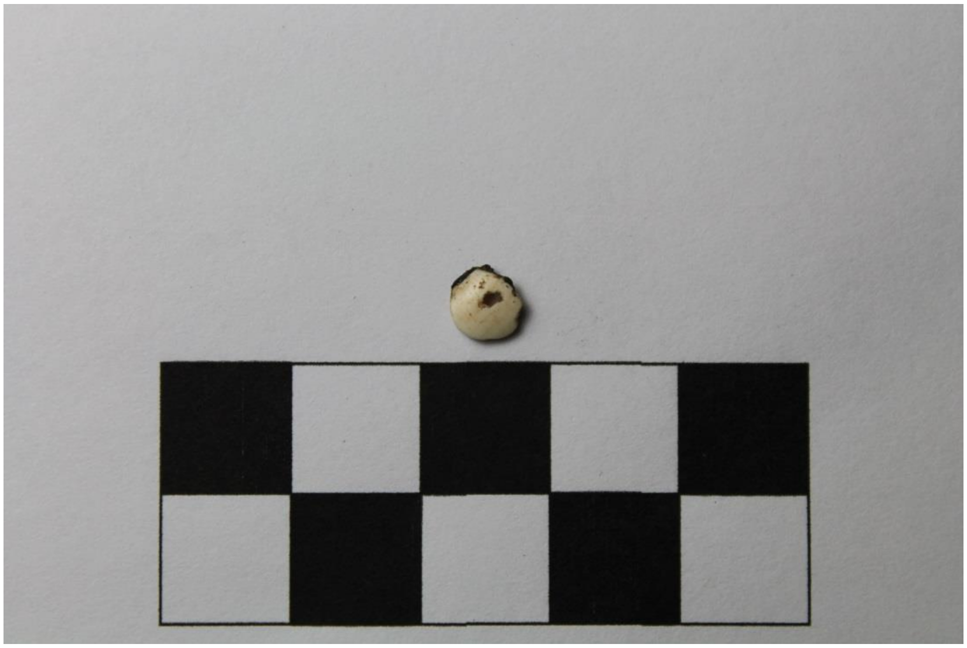


Figure 165: AC 1524-2932 (1988), Feature 39, Bead 1, Dorsal Side (scale in cm)

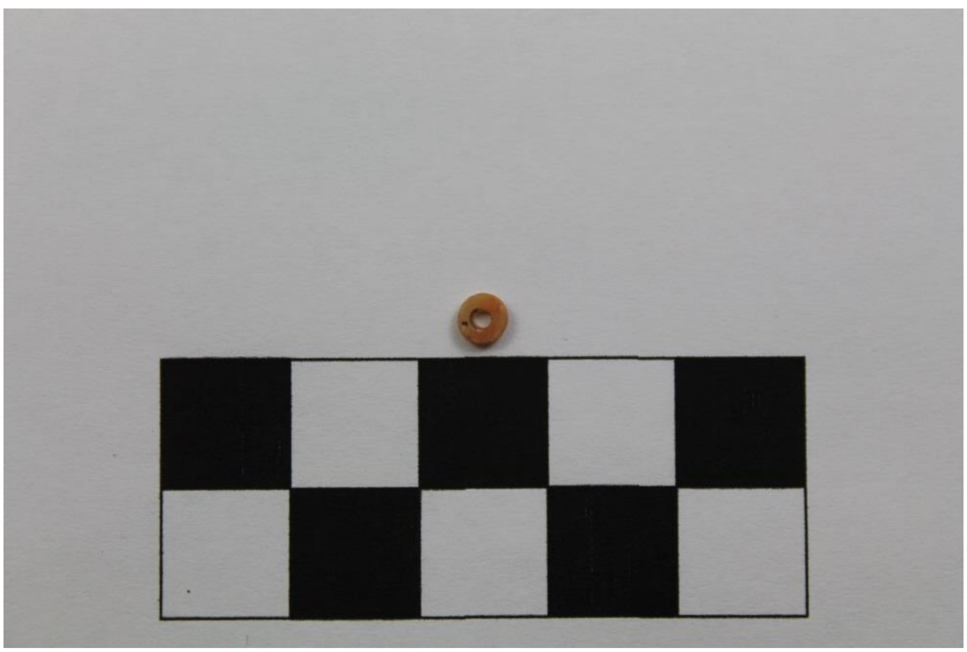


Figure 166: AC 1524-2952 (1988), Feature 27, Bead 1, First Side (scale in cm)

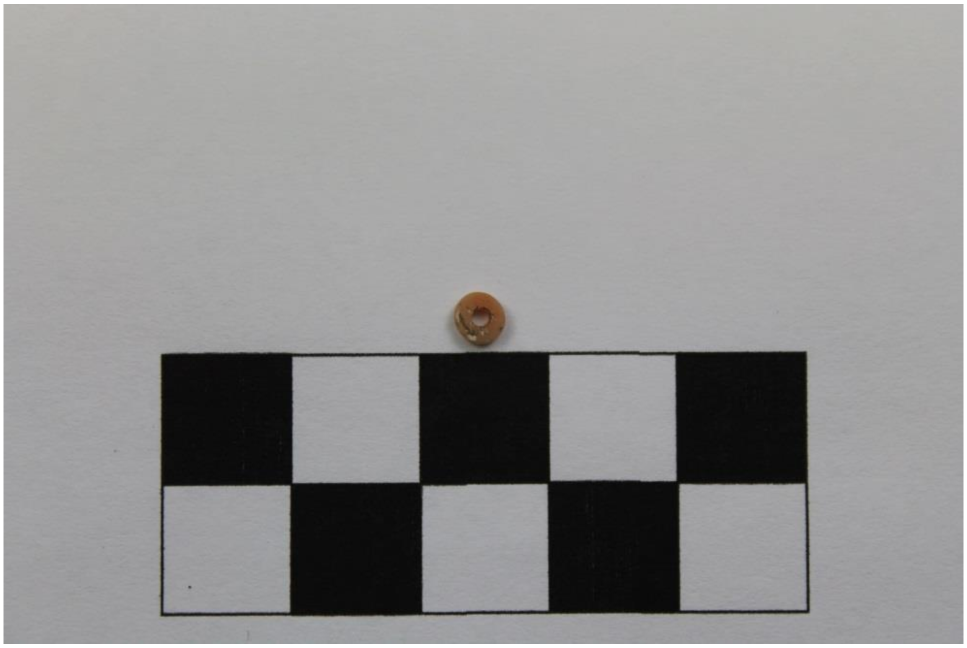


Figure 167: AC 1524-2952 (1988), Feature 27, Bead 1, Second Side (scale in cm)

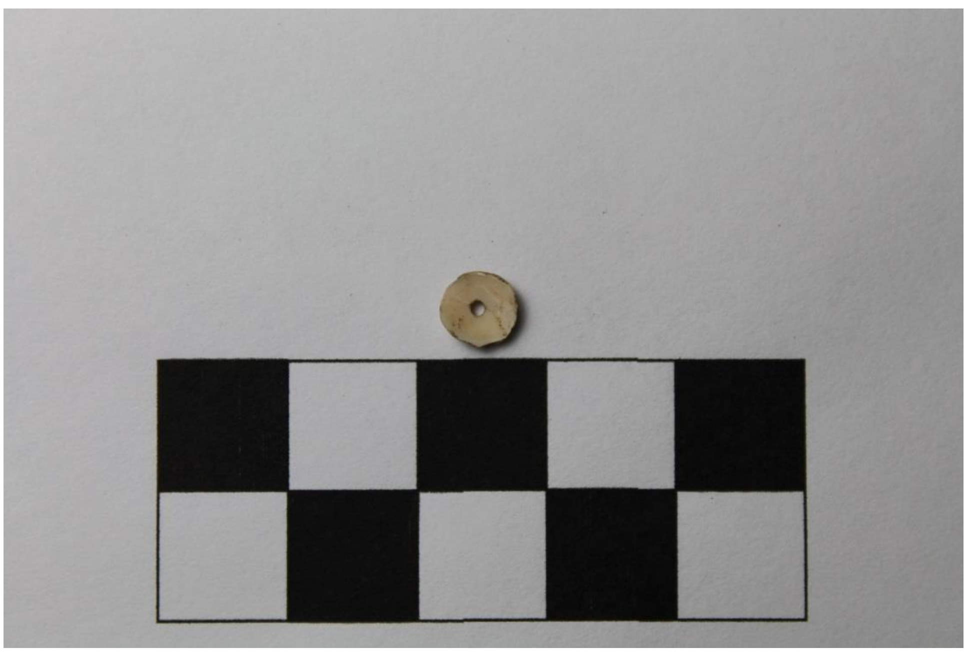


Figure 168: AC 1524-2972 (1988), Feature 34, Bead 1, Ventral Side (scale in cm)

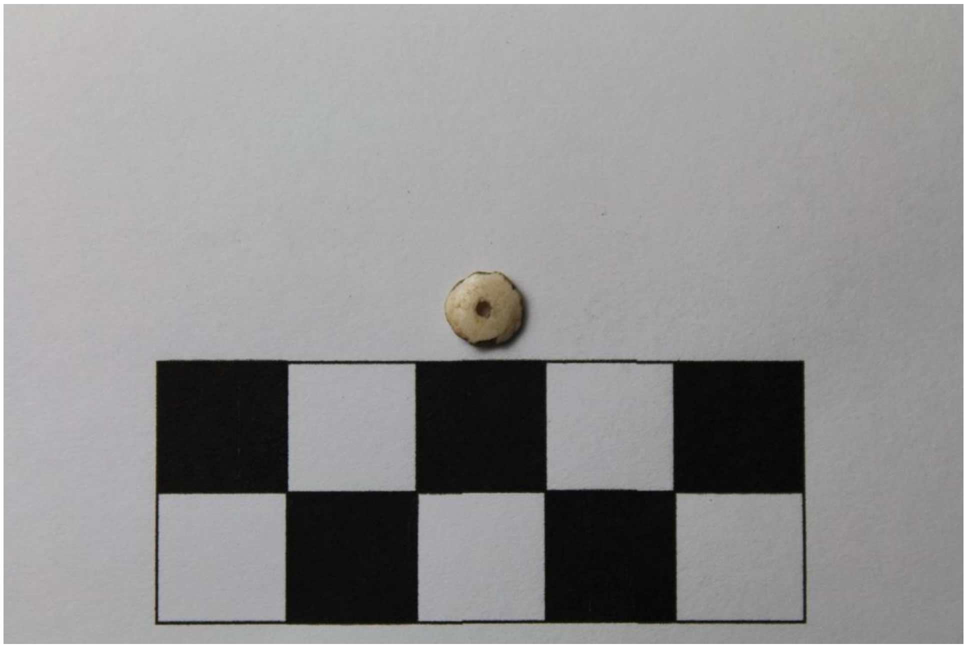


Figure 169: AC 1524-2972 (1988), Feature 34, Bead 1, Dorsal Side (scale in cm)

Figure 170: AC 1524-3050 (1988), Feature 22, Beads 1-11, Ventral Side (scale in cm)

Figure 171: AC 1524-3050 (1988), Feature 22, Beads 1-11, Dorsal Side (scale in cm)

Figure 172: AC 1524-3050 (1988), Feature 22, Unmeasured Beads (scale in cm)

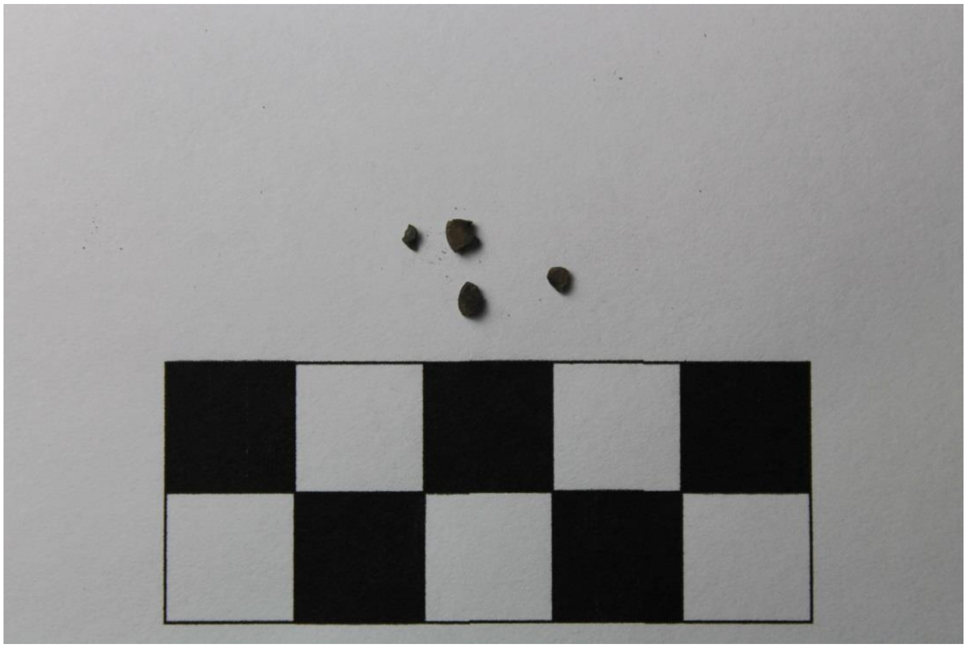


Figure 173: AC 1524-3051 (1988), Feature 22, Bead 1 (scale in cm)

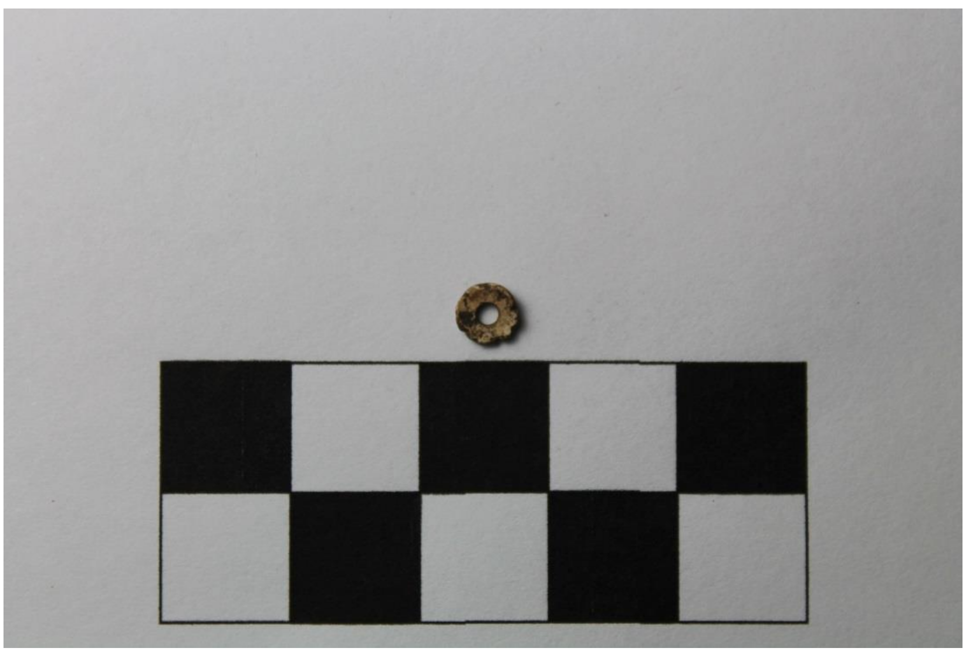


Figure 174: AC 1524-3052 (1988), Feature 22, Bead 1, Ventral Side (scale in cm)

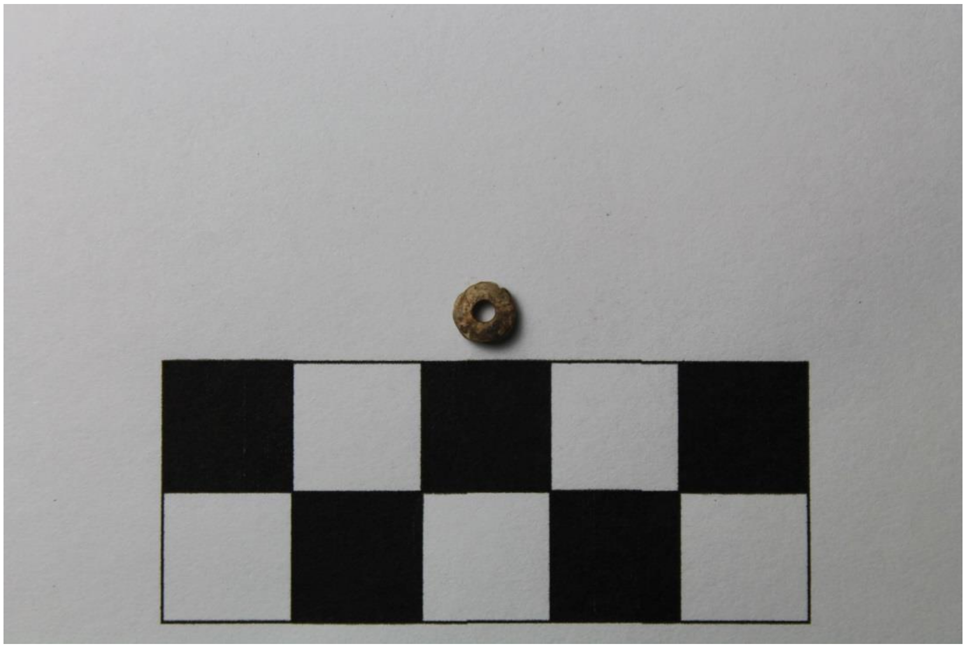


Figure 175: AC 1524-3052 (1988), Feature 22, Bead 1, Dorsal Side (scale in cm)

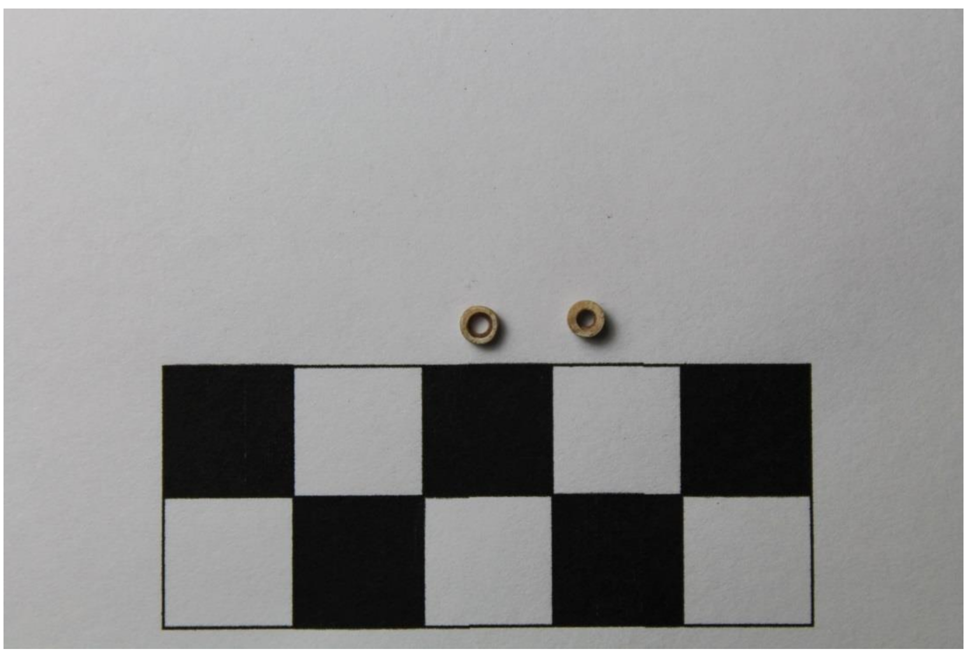


Figure 176: AC 1524-3053 (1988), Feature 22, Beads 1-2, First Side (scale in cm)

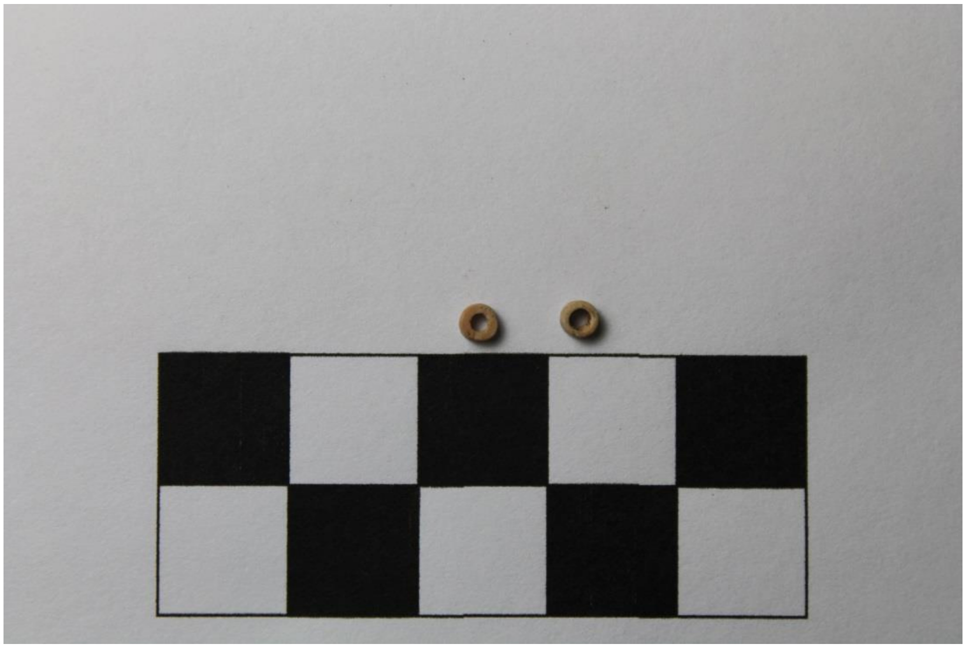


Figure 177: AC 1524-3053 (1988), Feature 22, Beads 1-2, Second Side (scale in cm)

Figure 178: AC 1524-3054 (1988), Feature 22, Beads 1-10, Ventral Side (scale in cm)

Figure 179: AC 1524-3054 (1988), Feature 22, Beads 1-10, Dorsal Side (scale in cm)

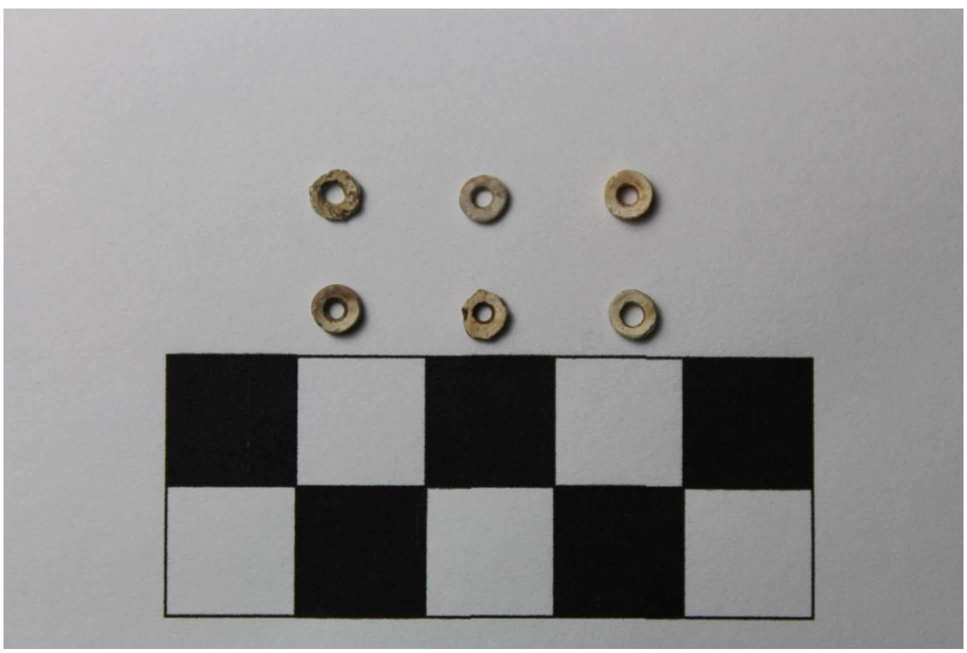


Figure 180: AC 1524-3054 (1988), Feature 22, Beads 11-16, Ventral Side (scale in cm)

Figure 181: AC 1524-3054 (1988), Feature 22, Beads 11-16, Dorsal Side (scale in cm)

Figure 182: AC 1524-3055 (1988), Feature 22, Beads 1-6, Ventral Side (scale in cm)

Figure 183: AC 1524-3055 (1988), Feature 22, Beads 1-6, Dorsal Side (scale in cm)

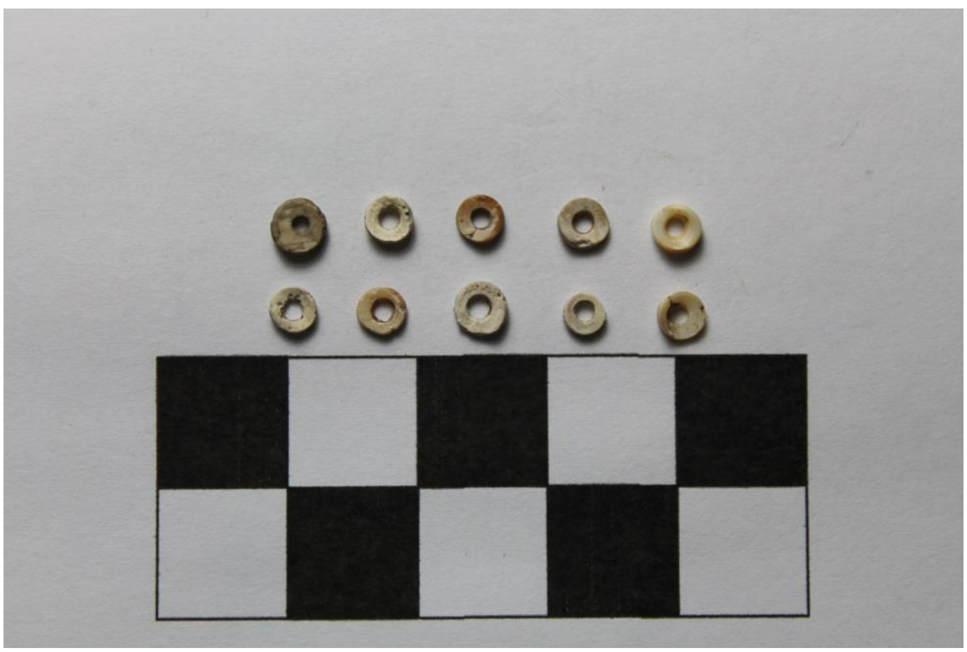


Figure 184: AC 1524-3056 (1988), Feature 22, Beads 1-10, Ventral Side (scale in cm)

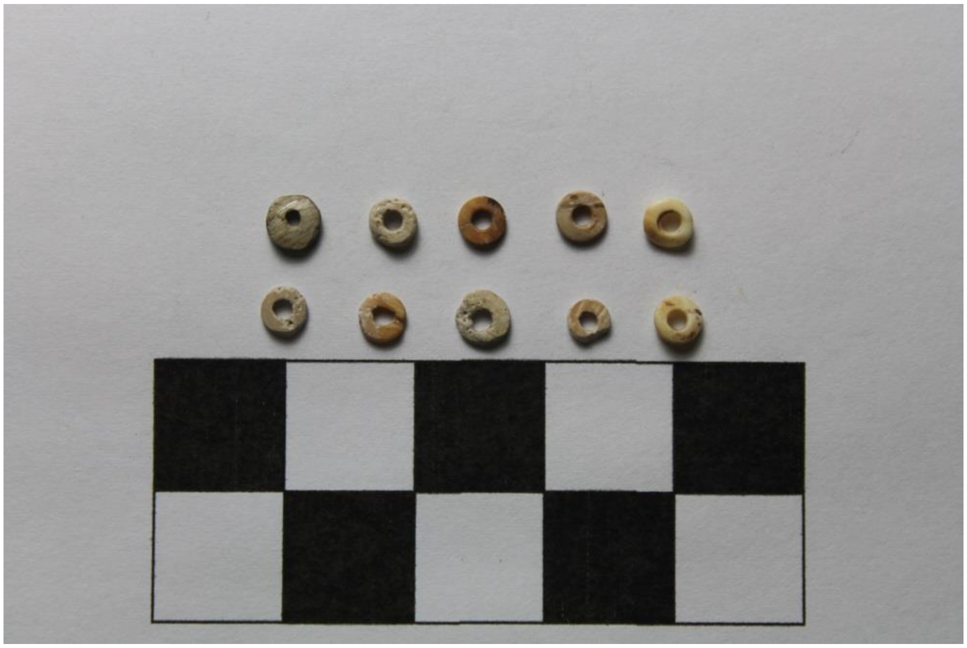


Figure 185: AC 1524-3056 (1988), Feature 22, Beads 1-10, Dorsal Side (scale in cm)

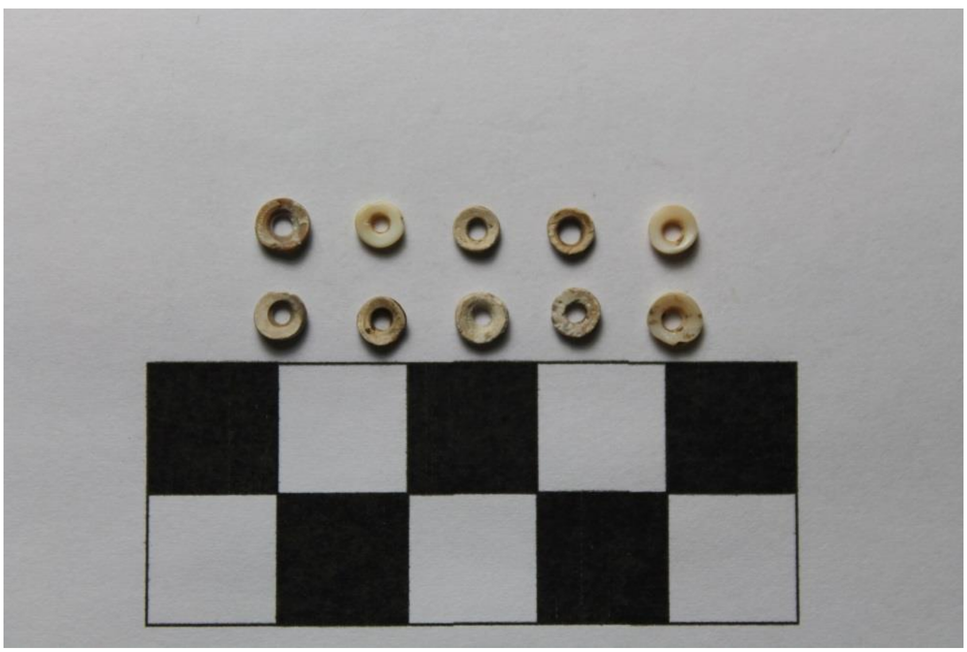


Figure 186: AC 1524-3056 (1988), Feature 22, Beads 11-20, Ventral Side (scale in cm)

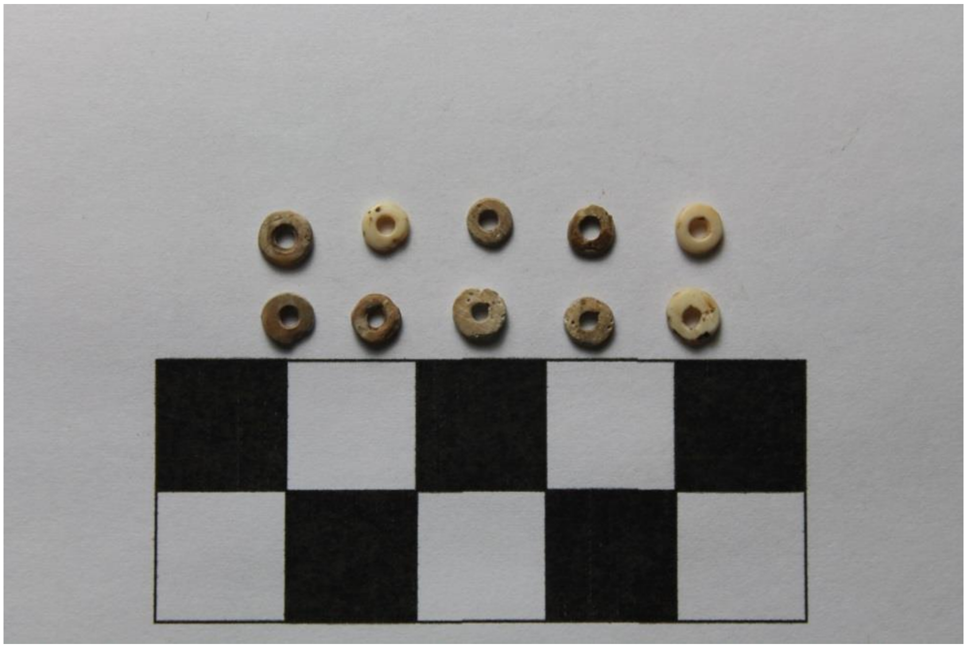


Figure 187: AC 1524-3056 (1988), Feature 22, Beads 11-20, Dorsal Side (scale in cm)

Figure 188: AC 1524-3056 (1988), Feature 22, Unmeasured Beads (scale in cm)

Figure 189: AC 1524-3057 (1988), Feature 22, Beads 1-10, Ventral Side (scale in cm)

Figure 190: AC 1524-3057 (1988), Feature 22, Beads 1-10, Dorsal Side (scale in cm)

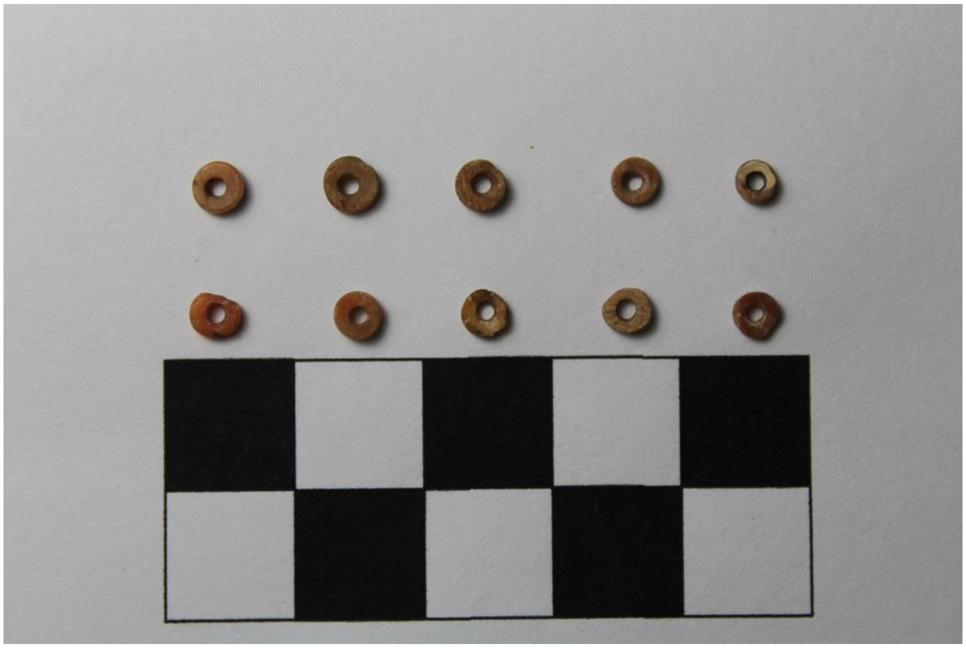


Figure 191: AC 1524-3058 (1988), Feature 22, Beads 1-10, First Side (scale in cm)

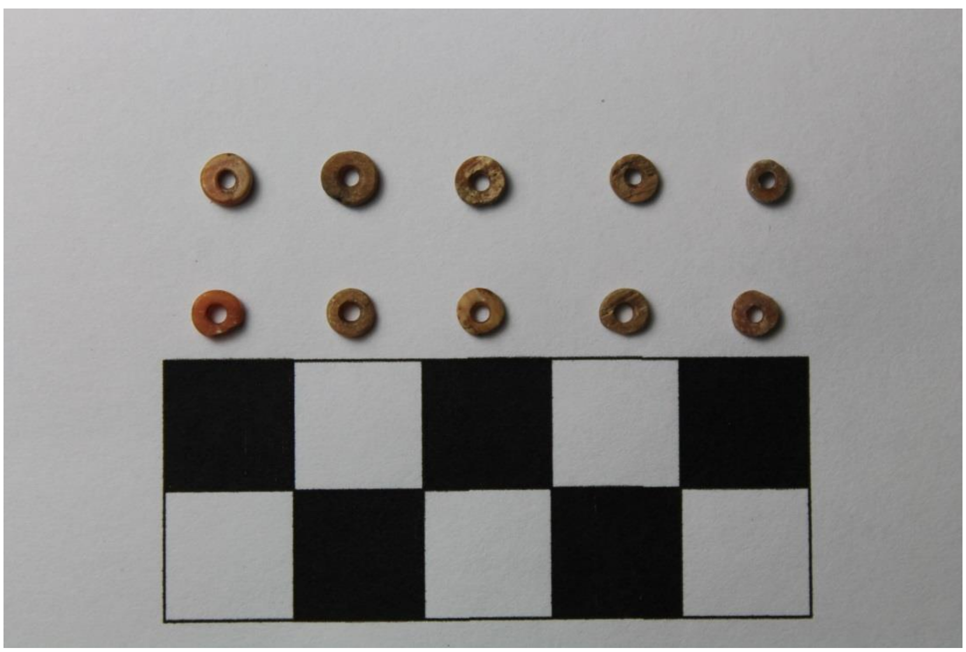


Figure 192: AC 1524-3058 (1988), Feature 22, Beads 1-10, Second Side (scale in cm)

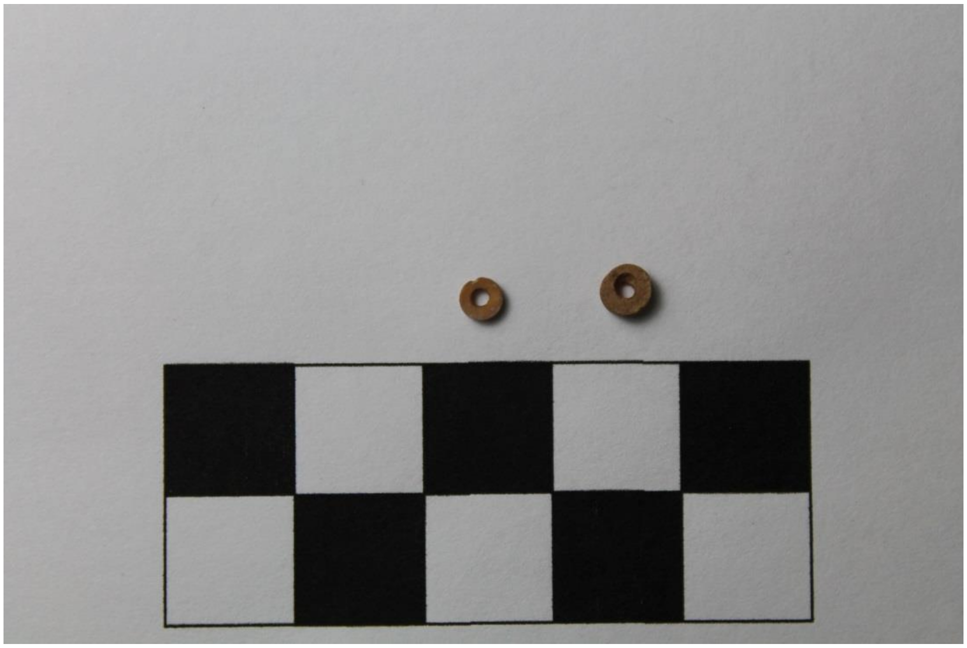


Figure 193: AC 1524-3058 (1988), Feature 22, Beads 11-12, First Side (scale in cm)

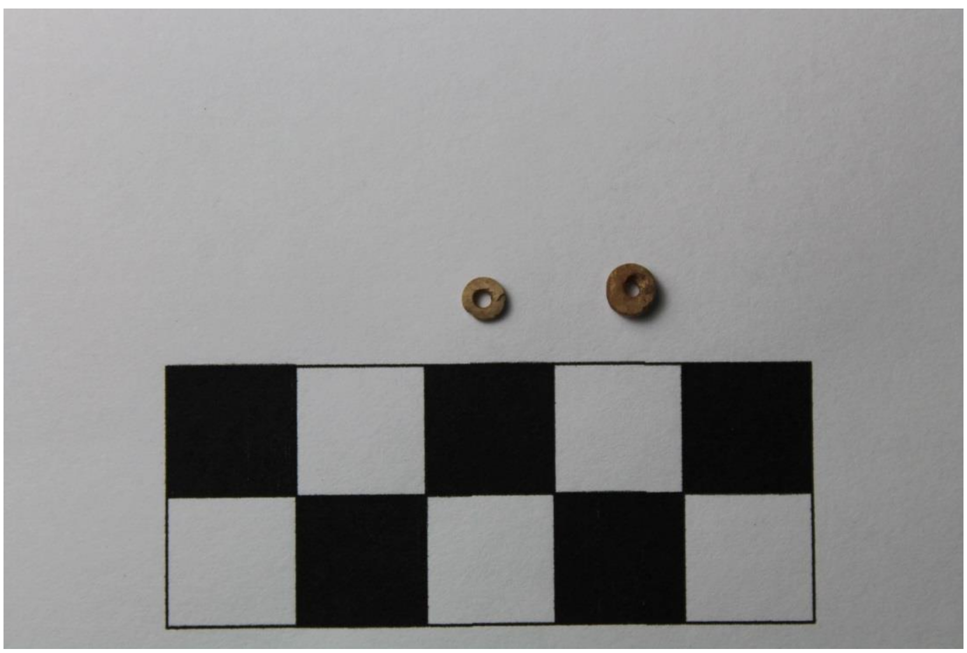


Figure 194: AC 1524-3058 (1988), Feature 22, Beads 11-12, Second Side (scale in cm)

Figure 195: AC 1524-3059 (1988), Feature 22, Beads 1-7, Ventral Side (scale in cm)

Figure 196: AC 1524-3059 (1988), Feature 22, Beads 1-7, Dorsal Side (scale in cm)

Figure 197: AC 1524-3060 (1988), Feature 22, Beads 1-5, Ventral Side (scale in cm)

Figure 198: AC 1524-3060 (1988), Feature 22, Beads 1-5, Dorsal Side (scale in cm)

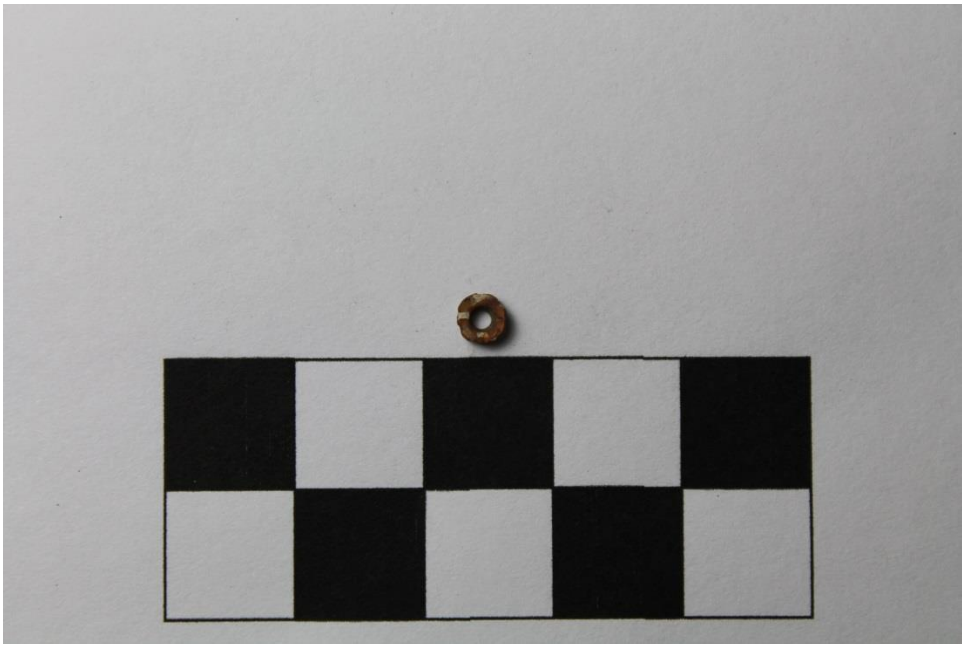


Figure 199: AC 1524-3061 (1988), Feature 22, Bead 1, Ventral Side (scale in cm)

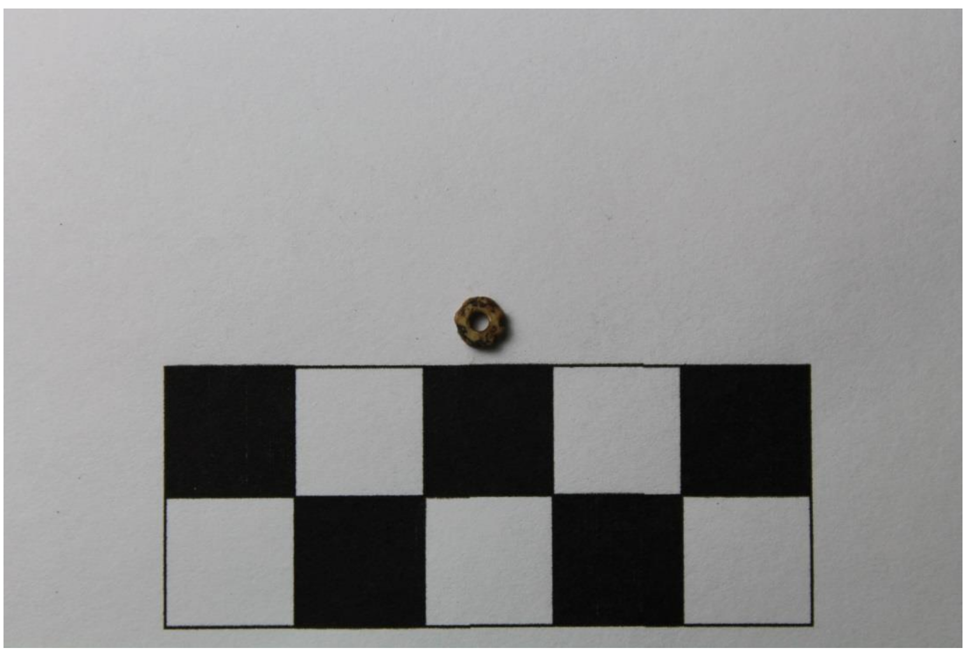


Figure 200: AC 1524-3061 (1988), Feature 22, Bead 1, Dorsal Side (scale in cm)

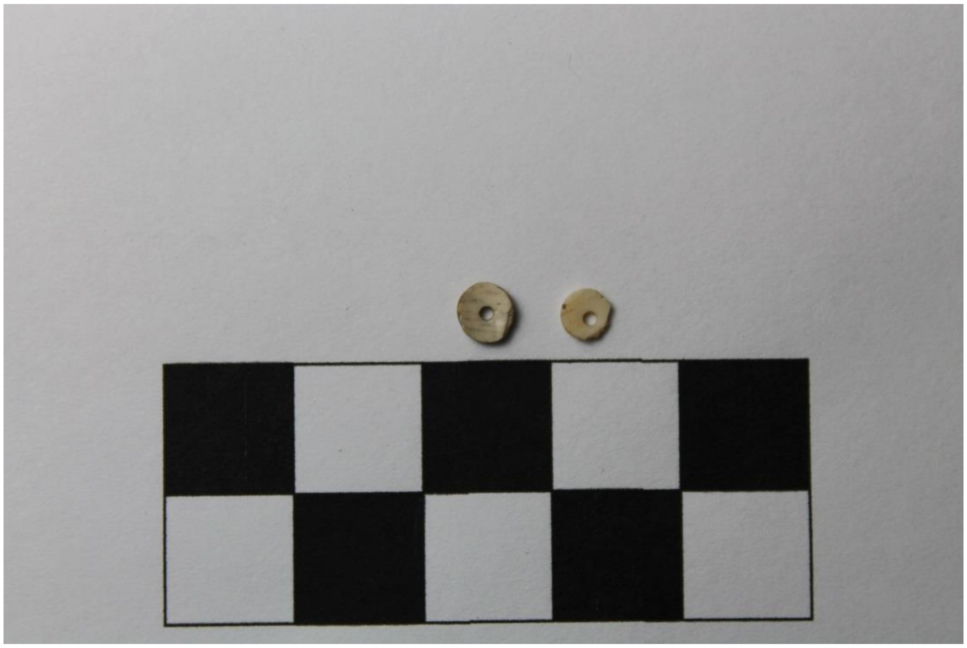


Figure 201: AC 1524-3062 (1988), Feature 22, Beads 1-2, Ventral Side (scale in cm)

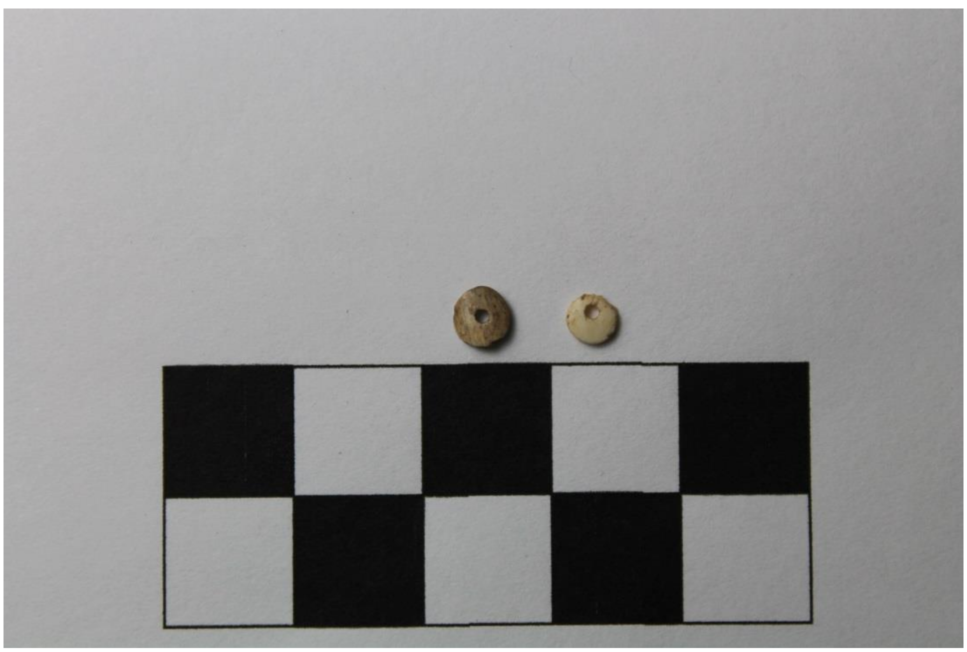


Figure 202: AC 1524-3062 (1988), Feature 22, Beads 1-2, Dorsal Side (scale in cm)

Figure 203: AC 1524-3063 (1988), Feature 22, Beads 1-2, Ventral Side (scale in cm)

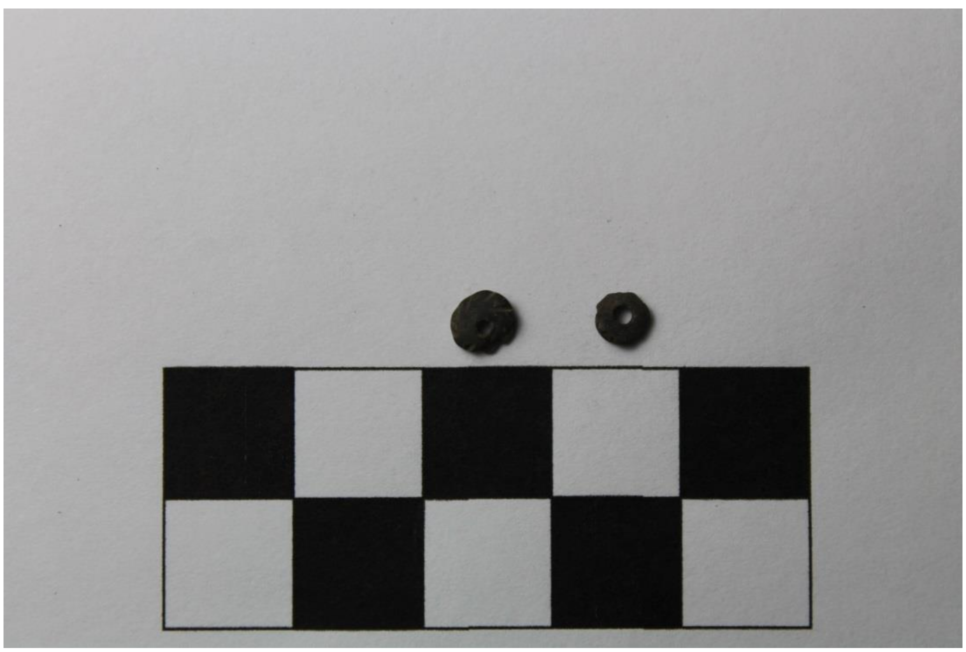


Figure 204: AC 1524-3063 (1988), Feature 22, Beads 1-2, Dorsal Side (scale in cm)

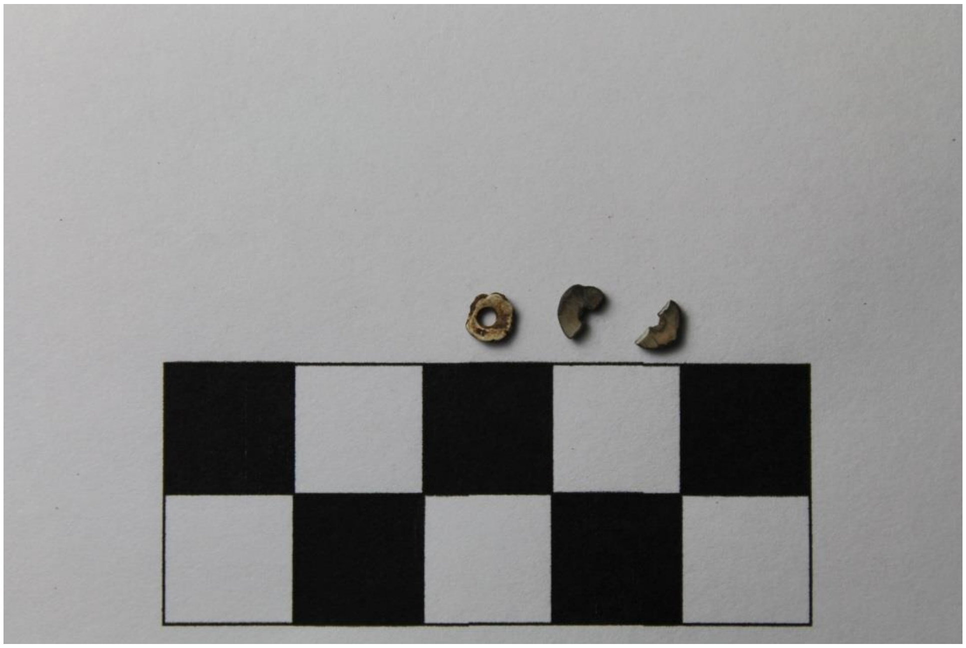


Figure 205: AC 1524-3064 (1988), Feature 22, Beads 1-2, Ventral Side (scale in cm)

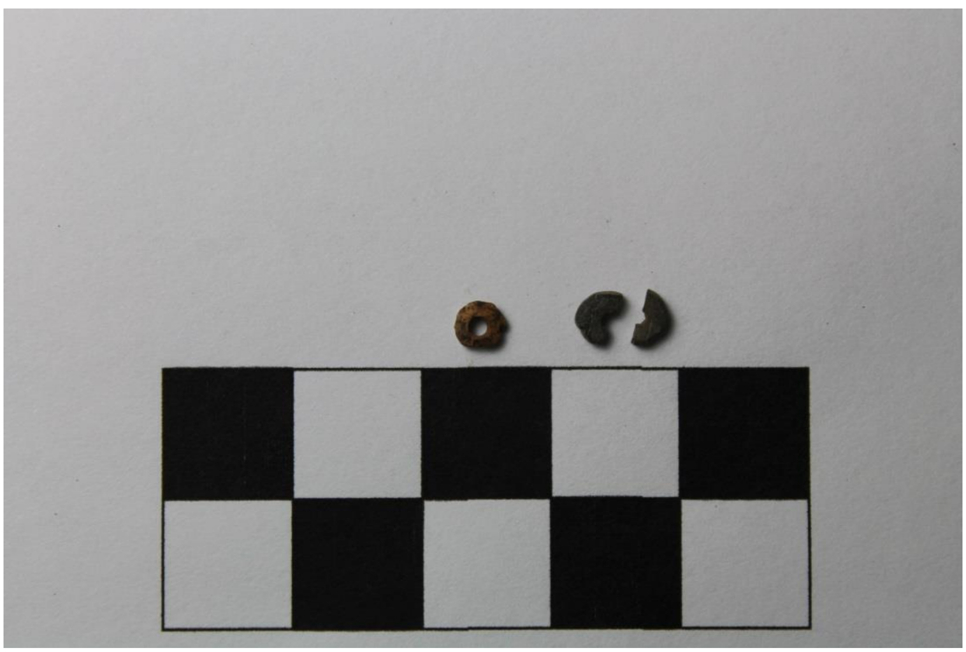


Figure 206: AC 1524-3064 (1988), Feature 22, Beads 1-2, Dorsal Side (scale in cm)

Figure 207: AC 1524-3065 (1988), Feature 22, Beads 1-10, Ventral Side (scale in cm)

Figure 208: AC 1524-3065 (1988), Feature 22, Beads 1-10, Dorsal Side (scale in cm)

Figure 209: AC 1524-3065 (1988), Feature 22, Beads 11-20, Ventral Side (scale in cm)

Figure 210: AC 1524-3065 (1988), Feature 22, Beads 11-20, Dorsal Side (scale in cm)

Figure 211: AC 1524-3065 (1988), Feature 22, Beads 21-29, Ventral Side (scale in cm)

Figure 212: AC 1524-3065 (1988), Feature 22, Beads 21-29, Dorsal Side (scale in cm)

Figure 213: AC 1524-3066 (1988), Feature 22, Beads 1-10, Ventral Side (scale in cm)

Figure 214: AC 1524-3066 (1988), Feature 22, Beads 1-10, Dorsal Side (scale in cm)

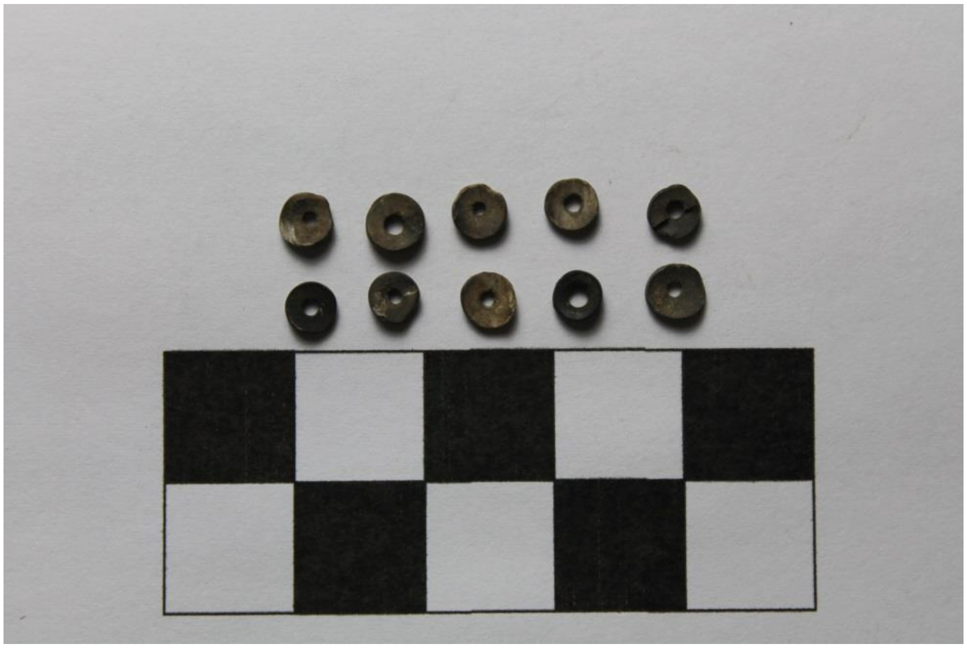


Figure 215: AC 1524-3066 (1988), Feature 22, Beads 11-20, Ventral Side (scale in cm)

Figure 216: AC 1524-3066 (1988), Feature 22, Beads 11-20, Dorsal Side (scale in cm)

Figure 217: AC 1524-3066 (1988), Feature 22, Unmeasured Beads (scale in cm)

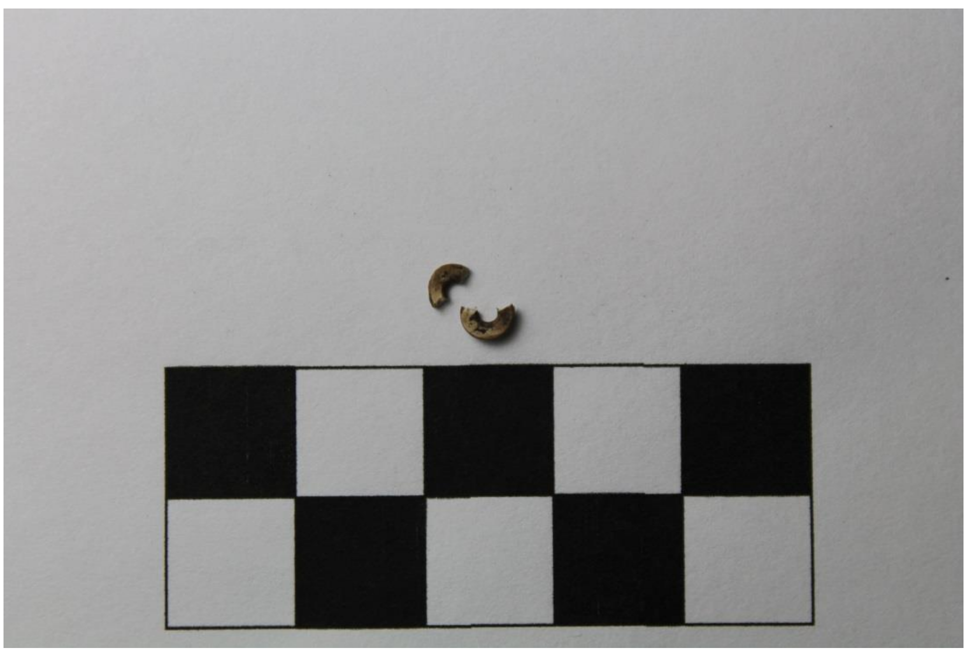


Figure 218: AC 1524-3085 (1988), Feature 25, Bead 1 (scale in cm)

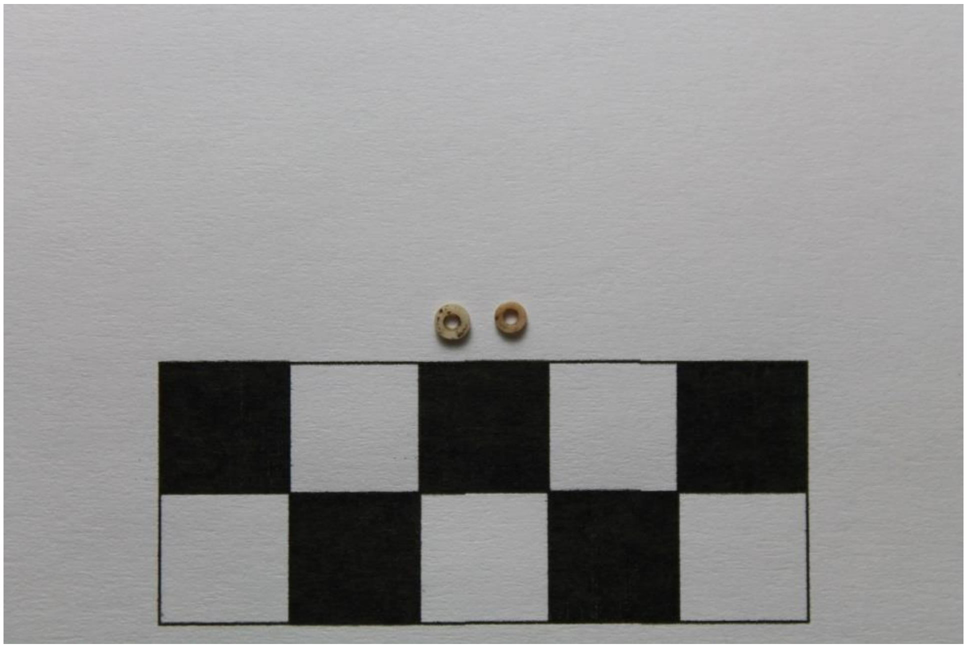


Figure 219: AC 1524-3091 (1988), Feature 23, Beads 1-2, Ventral Side (scale in cm)

Figure 220: AC 1524-3091 (1988), Feature 23, Beads 1-2, Dorsal Side (scale in cm)

Figure 221: AC 1524-3095 (1988), Feature 23, Beads 1-9, Ventral Side (scale in cm)

Figure 222: AC 1524-3095 (1988), Feature 23, Beads 1-9, Dorsal Side (scale in cm)

Figure 223: AC 1524-3095 (1988), Feature 23, Beads 1-9, Edge of Some Thick Beads (scale in cm)

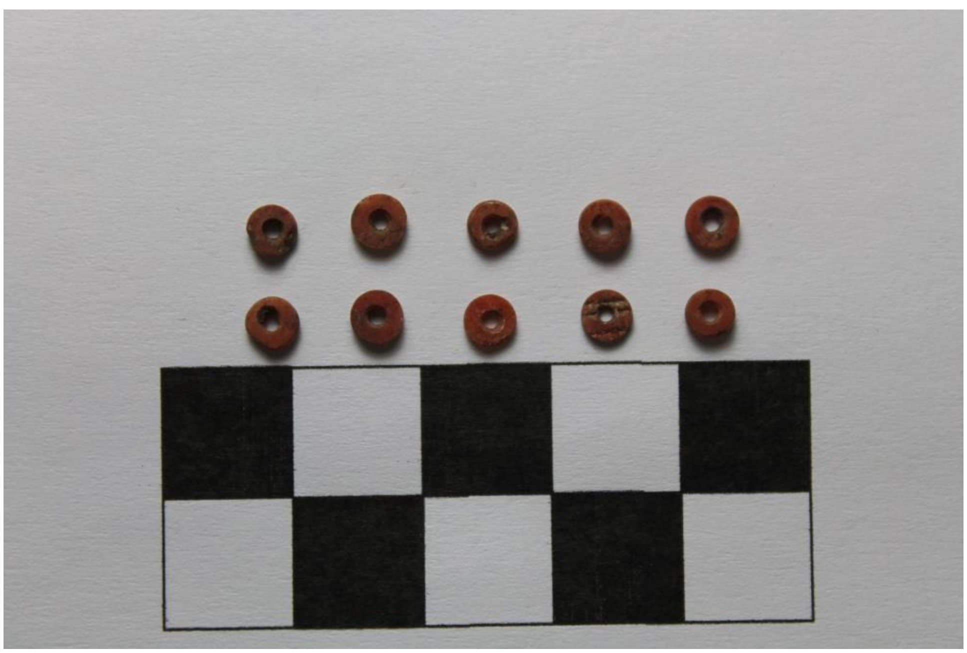


Figure 224: AC 1524-3096 (1988), Feature 23, Beads 1-10, First Side (scale in cm)

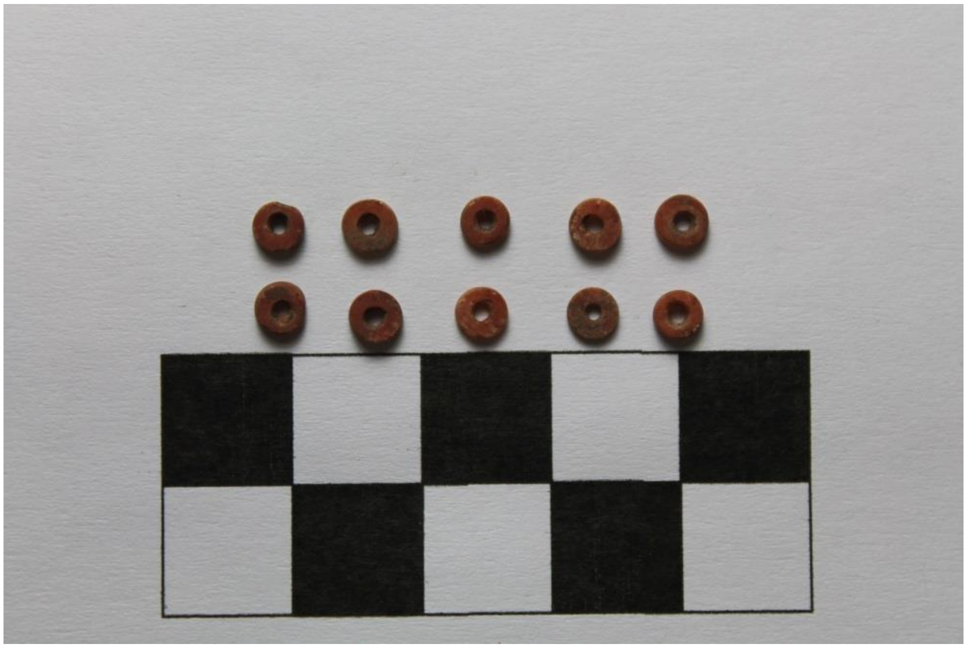


Figure 225: AC 1524-3096 (1988), Feature 23, Beads 1-10, Second Side (scale in cm)

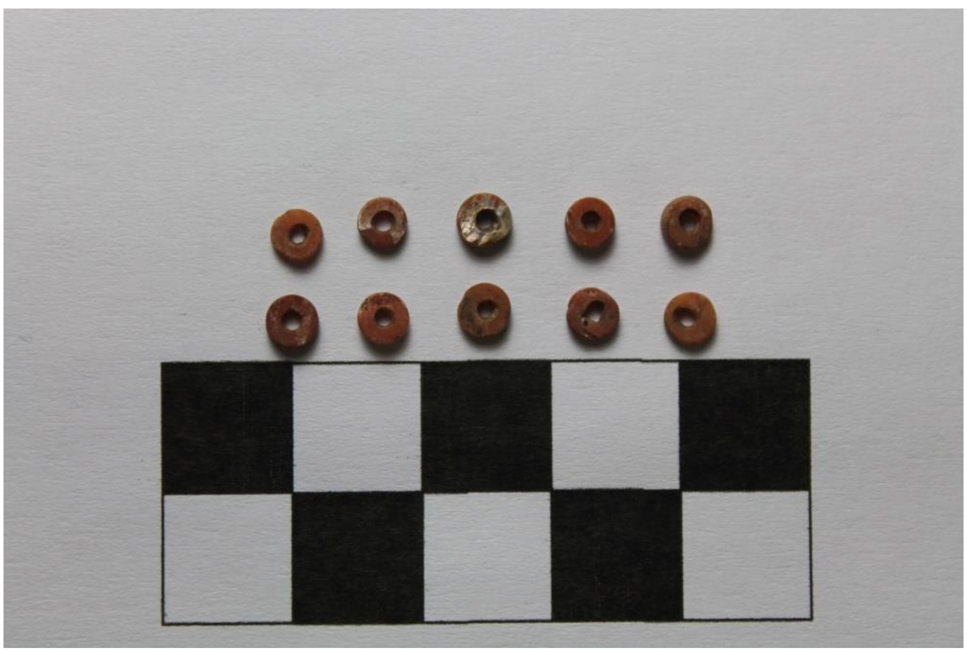


Figure 226: AC 1524-3096 (1988), Feature 23, Beads 11-20, First Side (scale in cm)

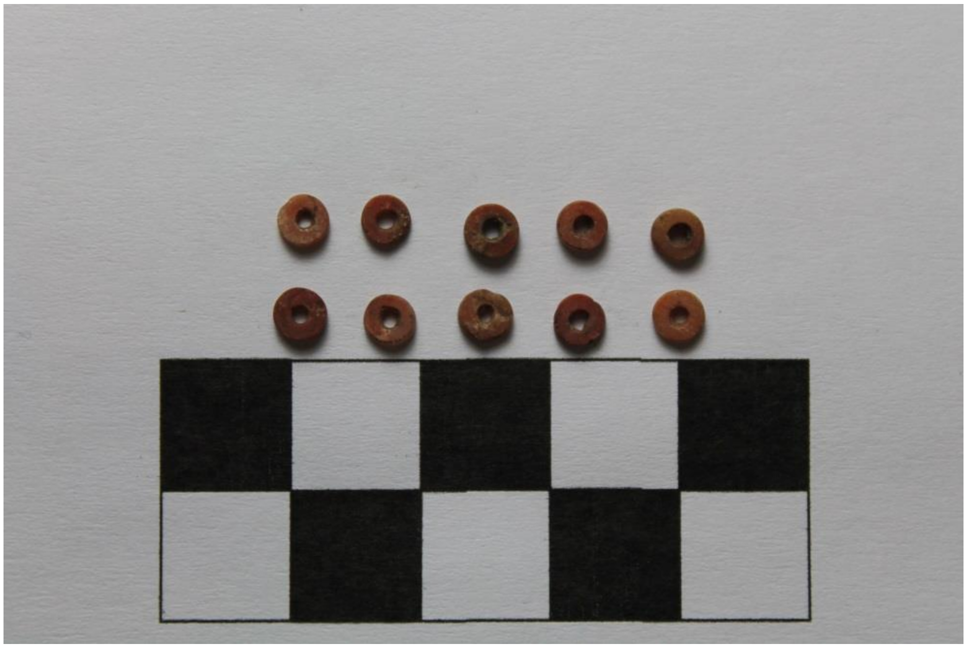


Figure 227: AC 1524-3096 (1988), Feature 23, Beads 11-20, Second Side (scale in cm)

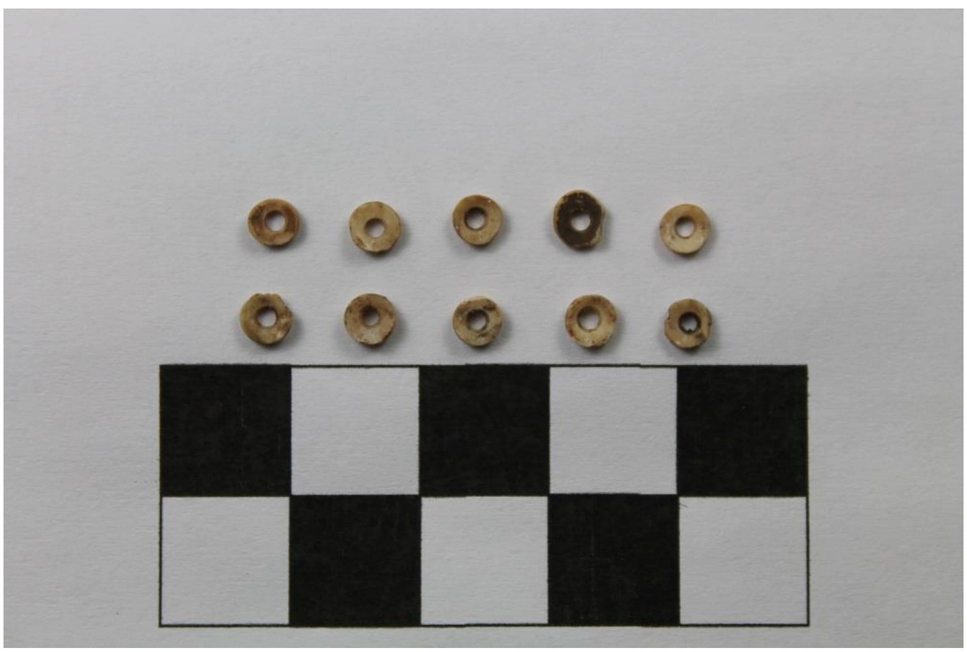


Figure 228: AC 1524-3097 (1988), Feature 23, Beads 1-10, Ventral Side (scale in cm)

Figure 229: AC 1524-3097 (1988), Feature 23, Beads 1-10, Dorsal Side (scale in cm)

Figure 230: AC 1524-3097 (1988), Feature 23, Beads 11-20, Ventral Side (scale in cm)

Figure 231: AC 1524-3097 (1988), Feature 23, Beads 11-20, Dorsal Side (scale in cm)

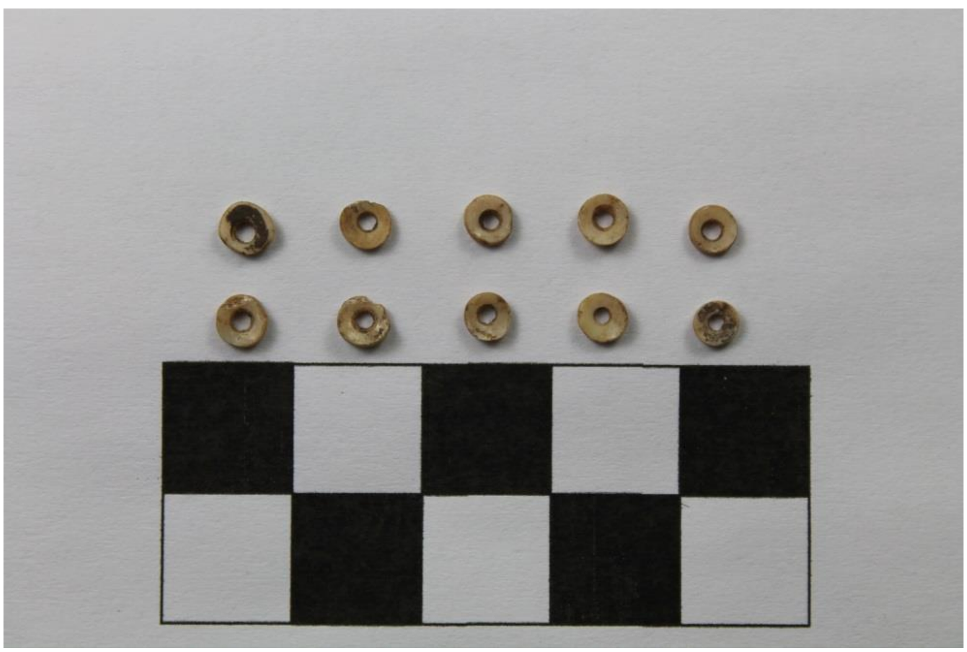


Figure 232: AC 1524-3097 (1988), Feature 23, Beads 21-30, Ventral Side (scale in cm)

Figure 233: AC 1524-3097 (1988), Feature 23, Beads 21-30, Dorsal Side (scale in cm)

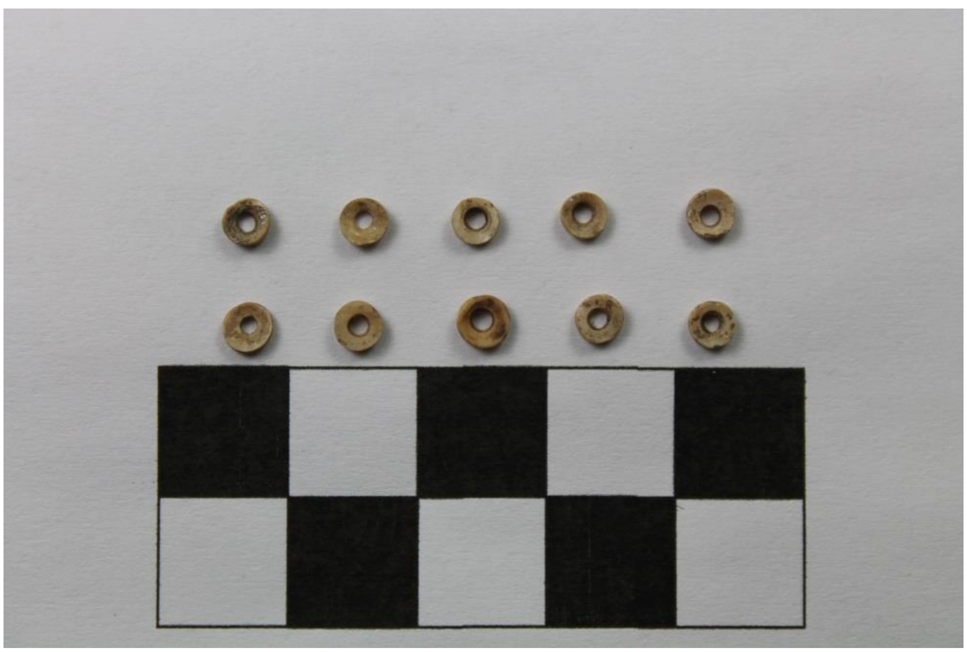


Figure 234: AC 1524-3097 (1988), Feature 23, Beads 31-40, Ventral Side (scale in cm)

Figure 235: AC 1524-3097 (1988), Feature 23, Beads 31-40, Dorsal Side (scale in cm)

Figure 236: AC 1524-3097 (1988), Feature 23, Beads 41-50, Ventral Side (scale in cm)

Figure 237: AC 1524-3097 (1988), Feature 23, Beads 41-50, Dorsal Side (scale in cm)

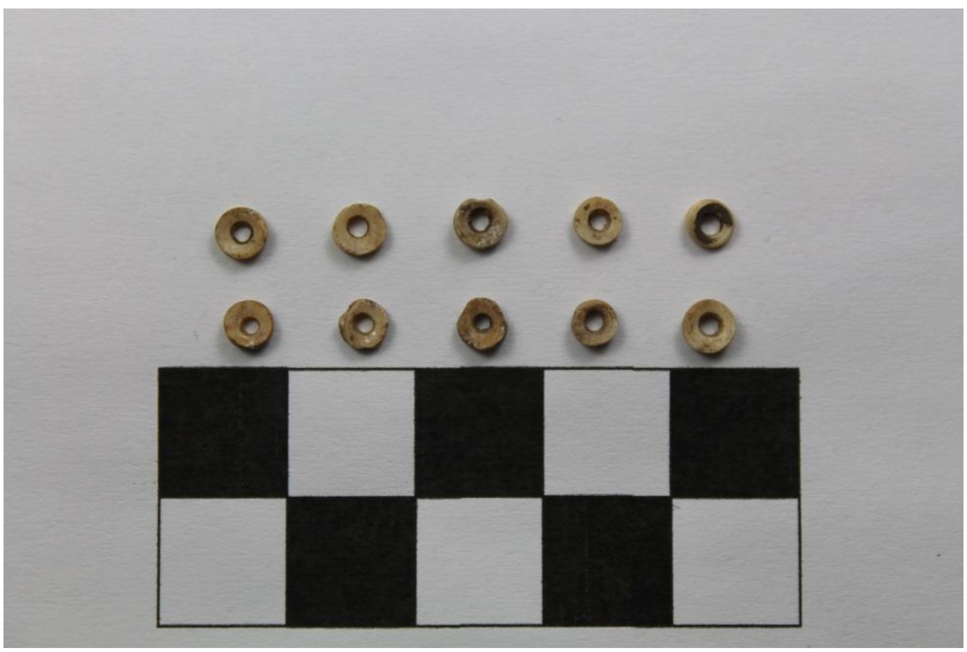


Figure 238: AC 1524-3097 (1988), Feature 23, Beads 51-60, Ventral Side (scale in cm)

Figure 239: AC 1524-3097 (1988), Feature 23, Beads 51-60, Dorsal Side (scale in cm)

Figure 240: AC 1524-3097 (1988), Feature 23, Beads 61-70, Ventral Side (scale in cm)

Figure 241: AC 1524-3097 (1988), Feature 23, Beads 61-70, Dorsal Side (scale in cm)

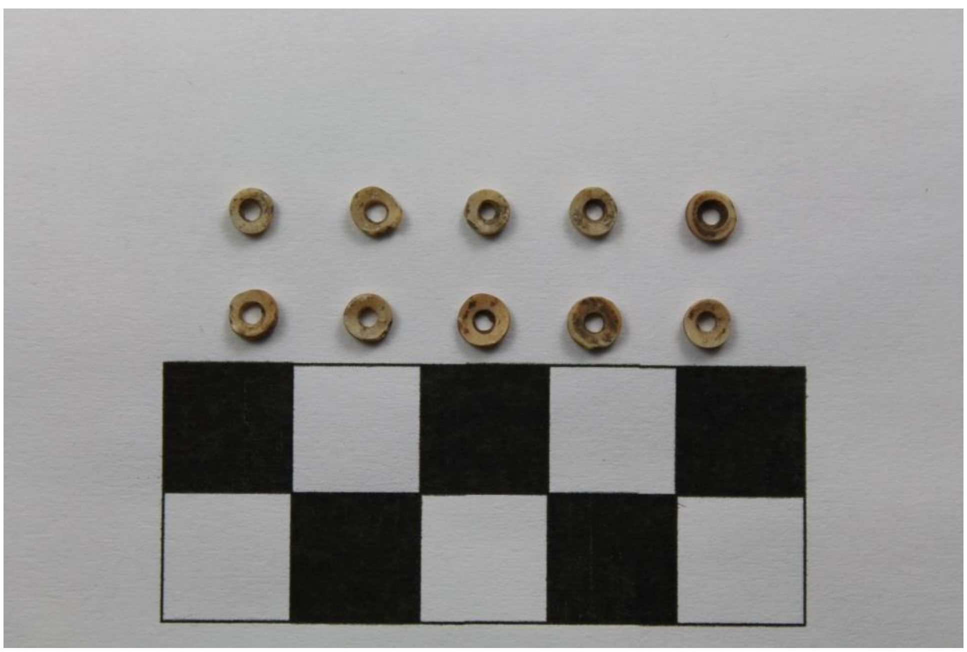


Figure 242: AC 1524-3097 (1988), Feature 23, Beads 71-80, Ventral Side (scale in cm)

Figure 243: AC 1524-3097 (1988), Feature 23, Beads 71-80, Dorsal Side (scale in cm)

Figure 244: AC 1524-3097 (1988), Feature 23, Unmeasured Beads (scale in cm)

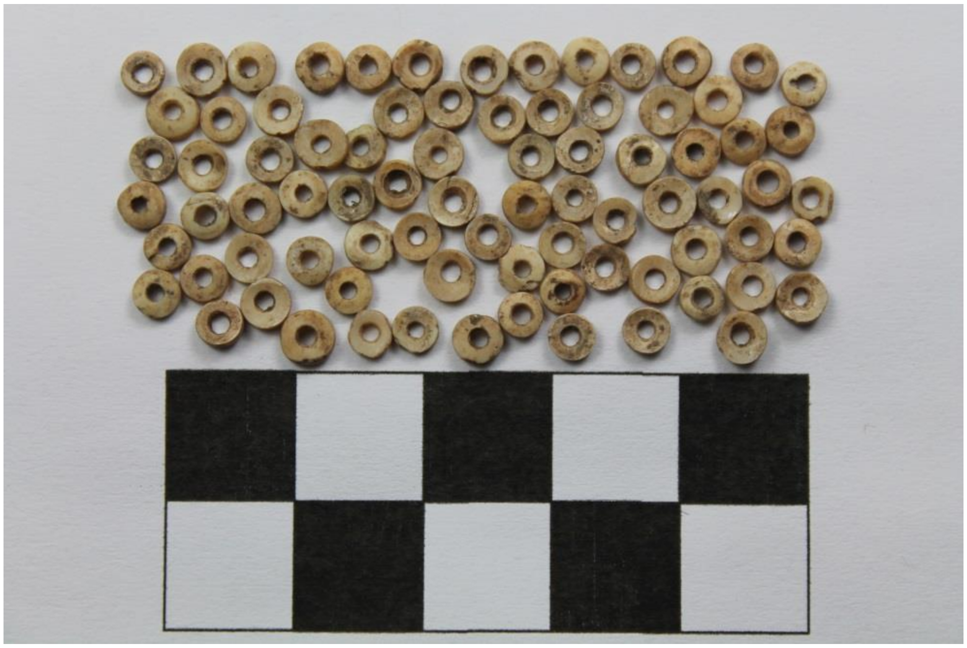


Figure 245: AC 1524-3097 (1988), Feature 23, Unmeasured Beads (scale in cm)

Figure 246: AC 1524-3097 (1988), Feature 23, Unmeasured Beads (scale in cm)

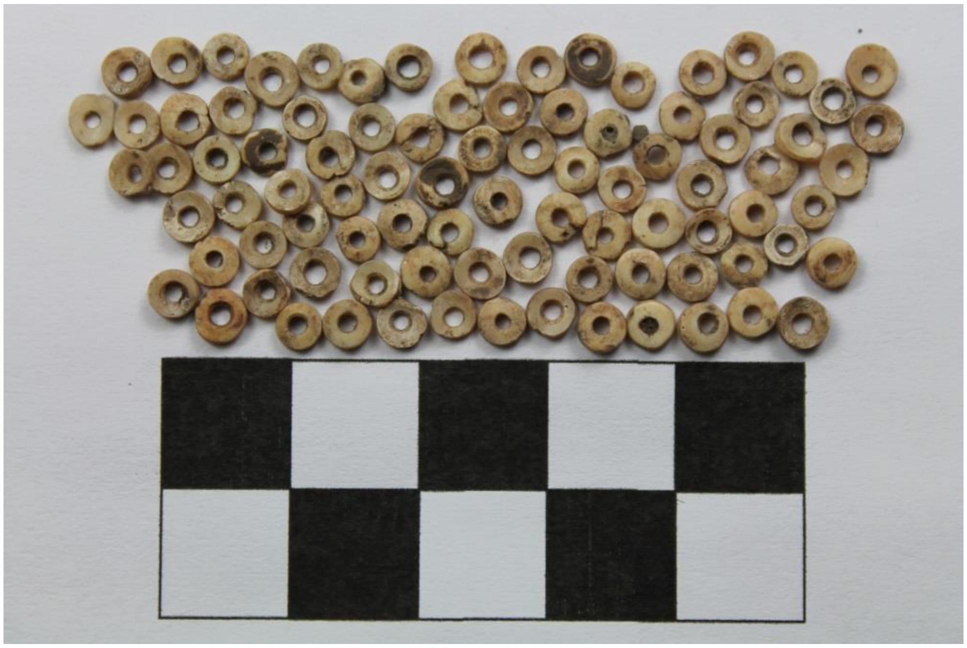


Figure 247: AC 1524-3097 (1988), Feature 23, Unmeasured Beads (scale in cm)

Figure 248: AC 1524-3184 (1988), Feature 37, Beads 1-9, Ventral Side (scale in cm)

Figure 249: AC 1524-3184 (1988), Feature 37, Beads 1-9, Dorsal Side (scale in cm)

Figure 250: AC 1524-3184 (1988), Feature 37, Unmeasured Beads (scale in cm)

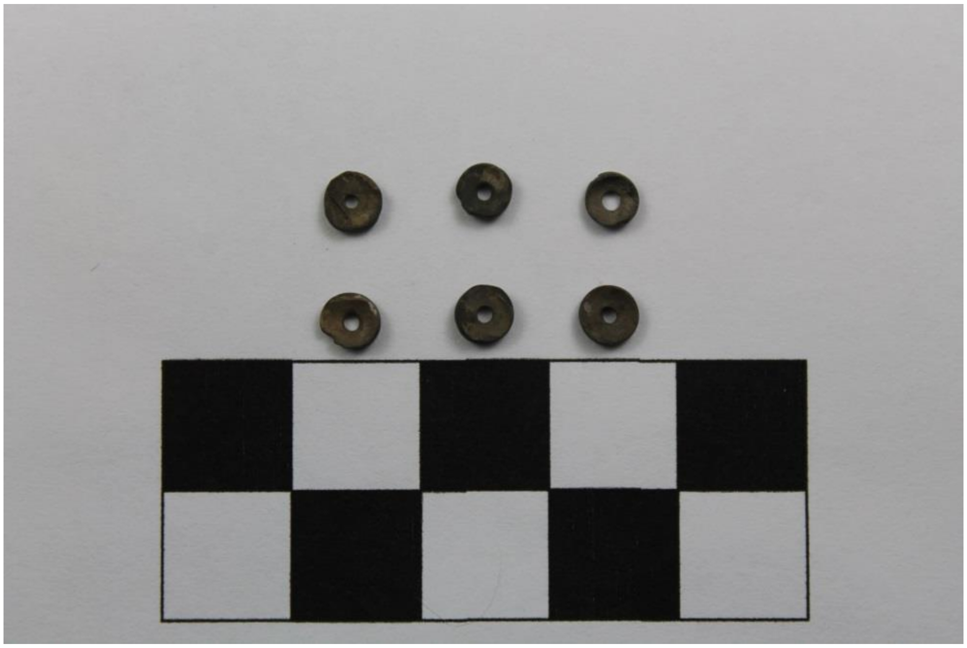


Figure 251: AC 1524-3185 (1988), Feature 37, Beads 1-6, Ventral Side (scale in cm)

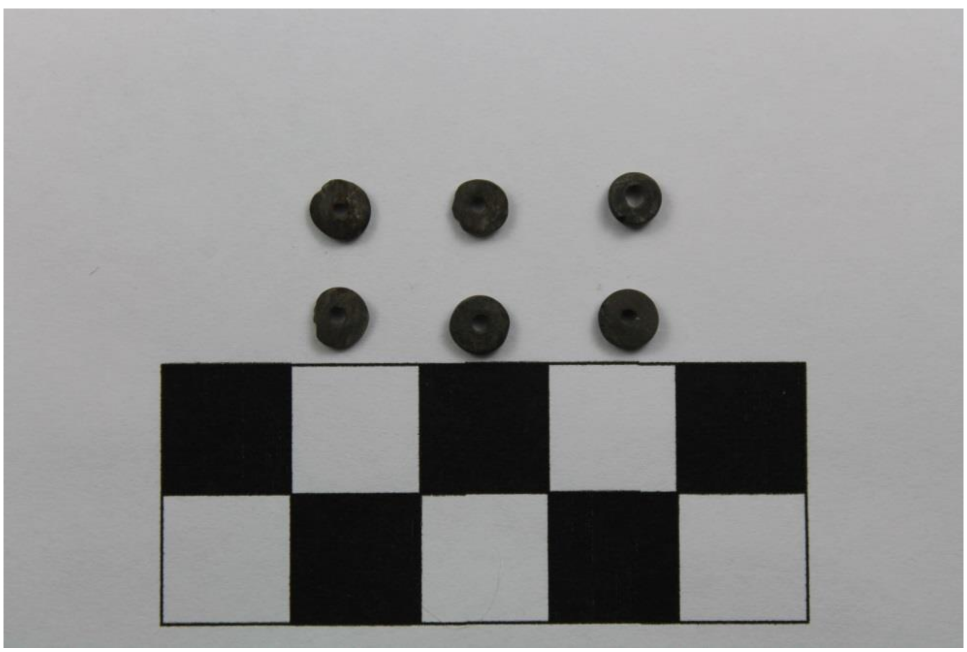


Figure 252: AC 1524-3185 (1988), Feature 37, Beads 1-6, Dorsal Side (scale in cm)

Figure 253: AC 1524-3185 (1988), Feature 37, Unmeasured Beads (scale in cm)

Figure 254: AC 1524-3186 (1988), Feature 37, Unmeasured Bead (scale in cm)

Figure 255: AC 1524-3187 (1988), Feature 37, Beads 1-10, Ventral Side (scale in cm)

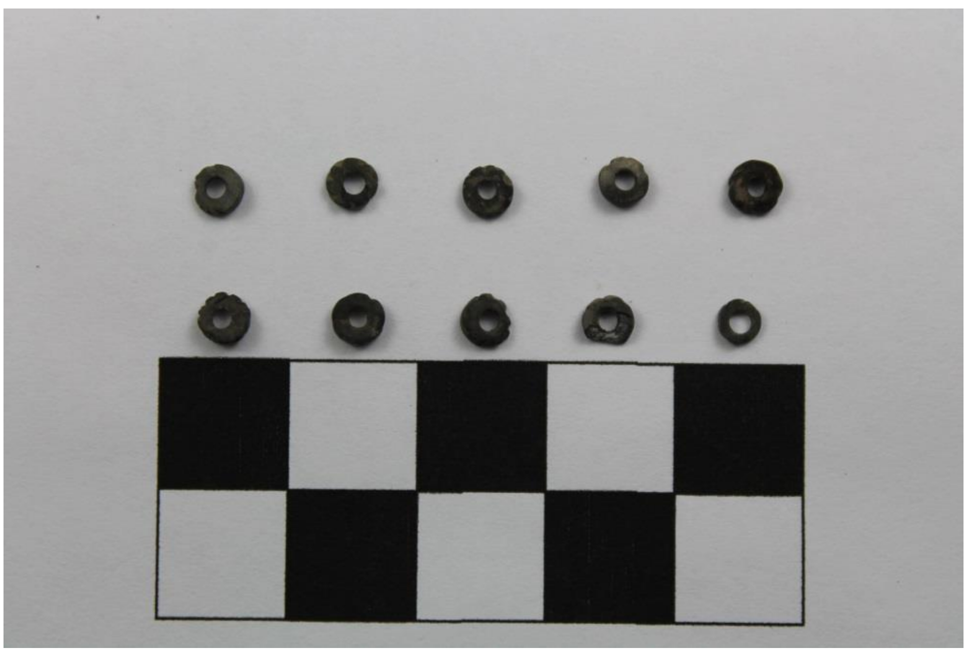


Figure 256: AC 1524-3187 (1988), Feature 37, Beads 1-10, Dorsal Side (scale in cm)

Figure 257: AC 1524-3187 (1988), Feature 37, Beads 1-10, Edge of Some Thick Beads (scale in cm)

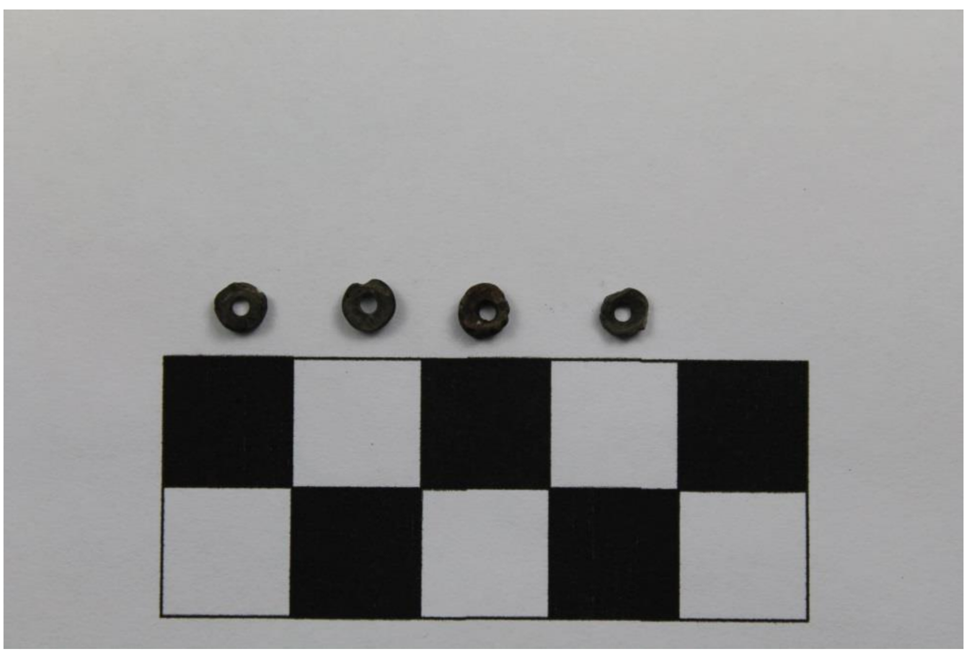


Figure 258: AC 1524-3187 (1988), Feature 37, Beads 11-14, Ventral Side (scale in cm)

Figure 259: AC 1524-3187 (1988), Feature 37, Beads 11-14, Dorsal Side (scale in cm)

Figure 260: AC 1524-3187 (1988), Feature 37, Unmeasured Beads (scale in cm)

Figure 261: AC 1524-3188 (1988), Feature 37, Beads 1-10, Ventral Side (scale in cm)

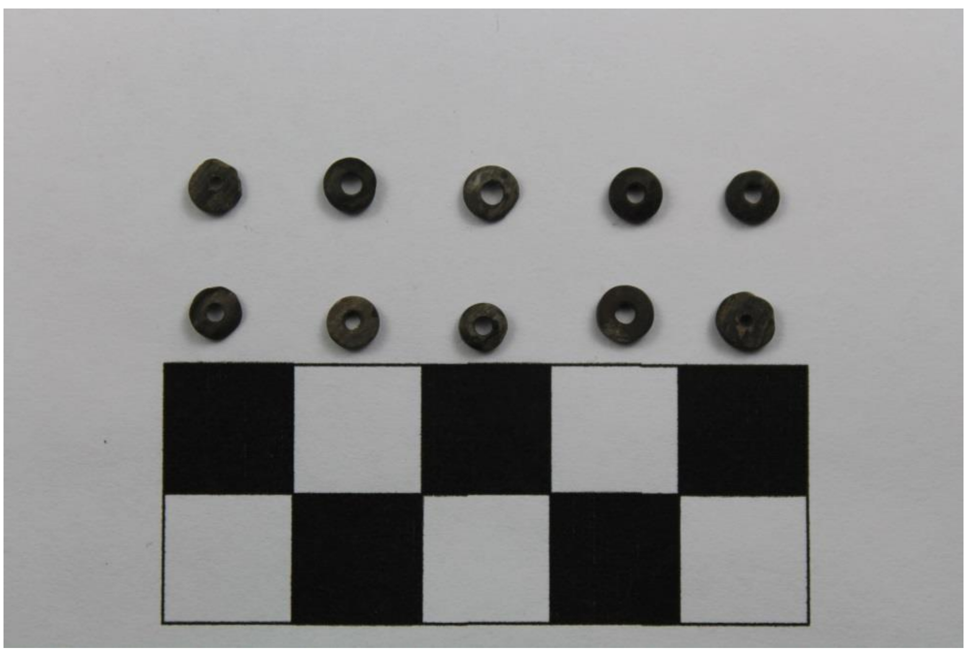


Figure 262: AC 1524-3188 (1988), Feature 37, Beads 1-10, Dorsal Side (scale in cm)

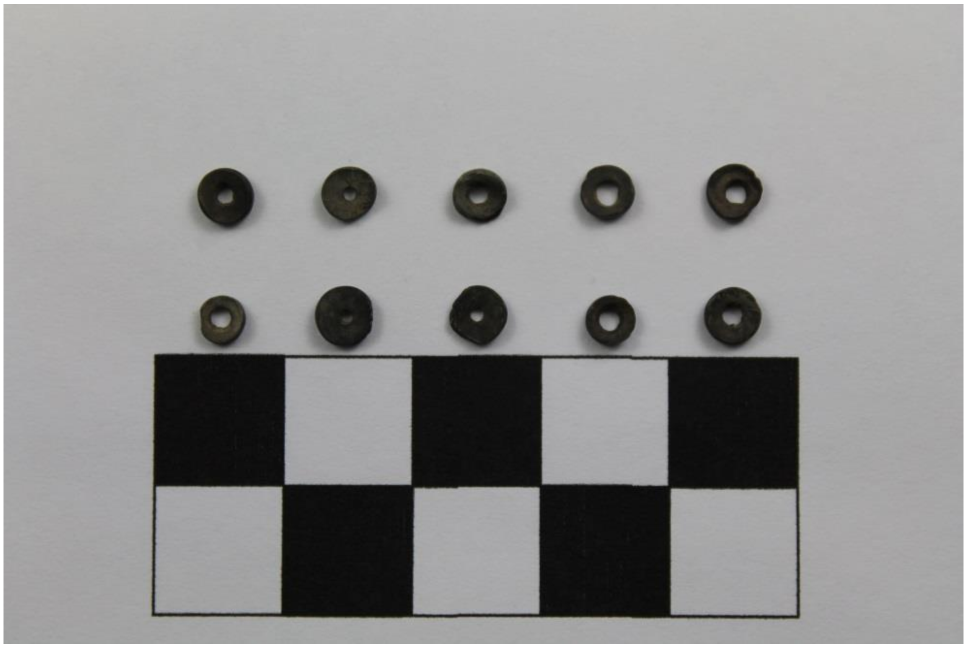


Figure 263: AC 1524-3188 (1988), Feature 37, Beads 11-20, Ventral Side (scale in cm)

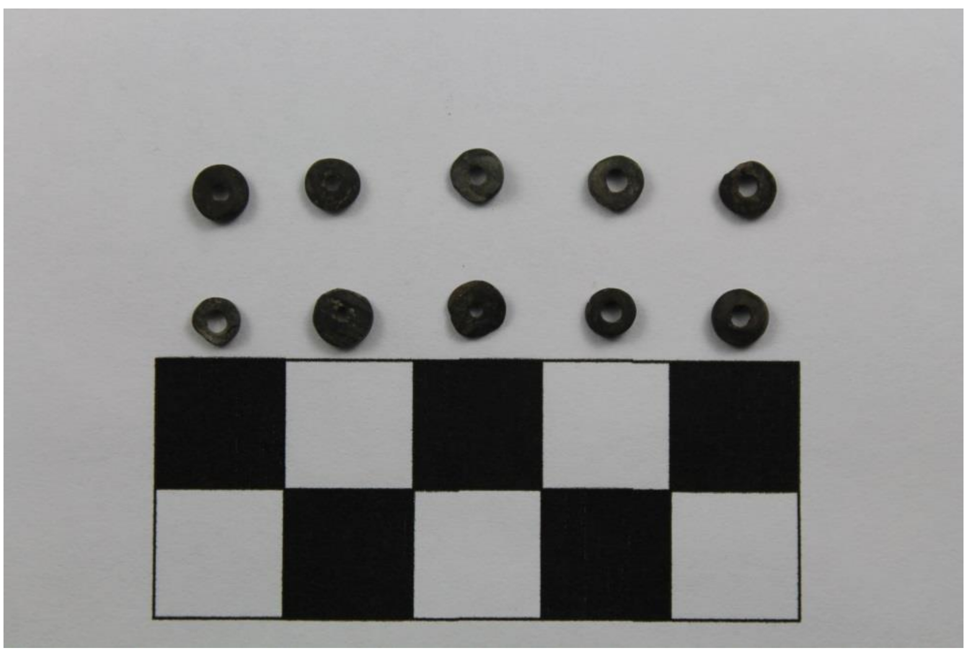


Figure 264: AC 1524-3188 (1988), Feature 37, Beads 11-20, Dorsal Side (scale in cm)

Figure 265: AC 1524-3188 (1988), Feature 37, Unmeasured Beads (scale in cm)

Figure 266: AC 1524-3189 (1988), Feature 37, Beads 1-10, Ventral Side (scale in cm)

Figure 267: AC 1524-3189 (1988), Feature 37, Beads 1-10, Dorsal Side (scale in cm)

Figure 268: AC 1524-3189 (1988), Feature 37, Beads 11-20, Ventral Side (scale in cm)

Figure 269: AC 1524-3189 (1988), Feature 37, Beads 11-20, Dorsal Side (scale in cm)

Figure 270: AC 1524-3189 (1988), Feature 37, Unmeasured Beads (scale in cm)

Figure 271: AC 1524-3247 (1988), Feature 36, Beads 1-2, Ventral Side (scale in cm)

Figure 272: AC 1524-3247 (1988), Feature 36, Beads 1-2, Dorsal Side (scale in cm)

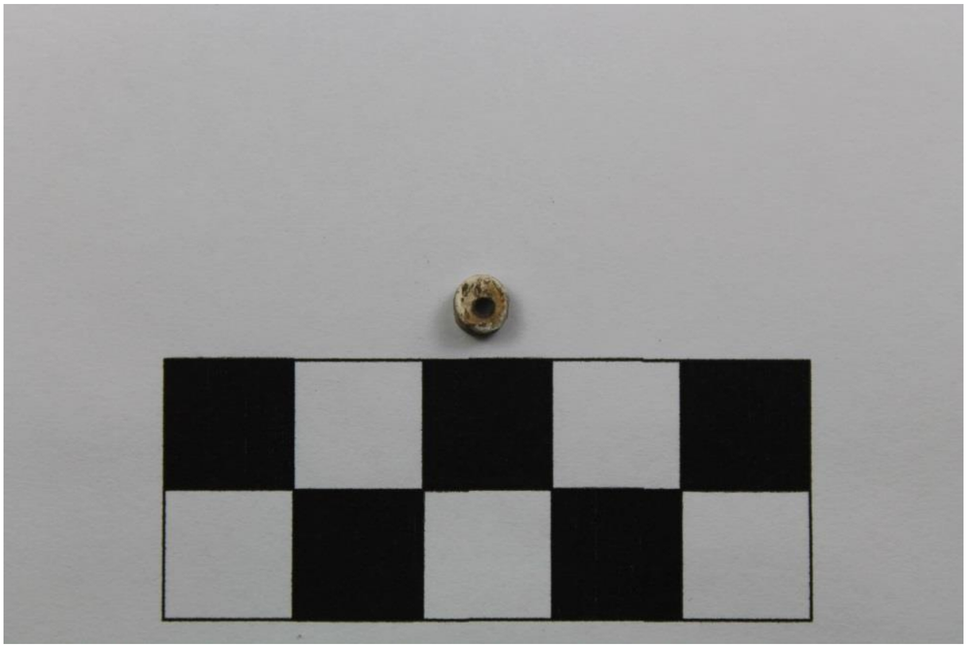


Figure 273: AC 1524-3292 (1988), Feature 36, Bead 1, Ventral Side (scale in cm)

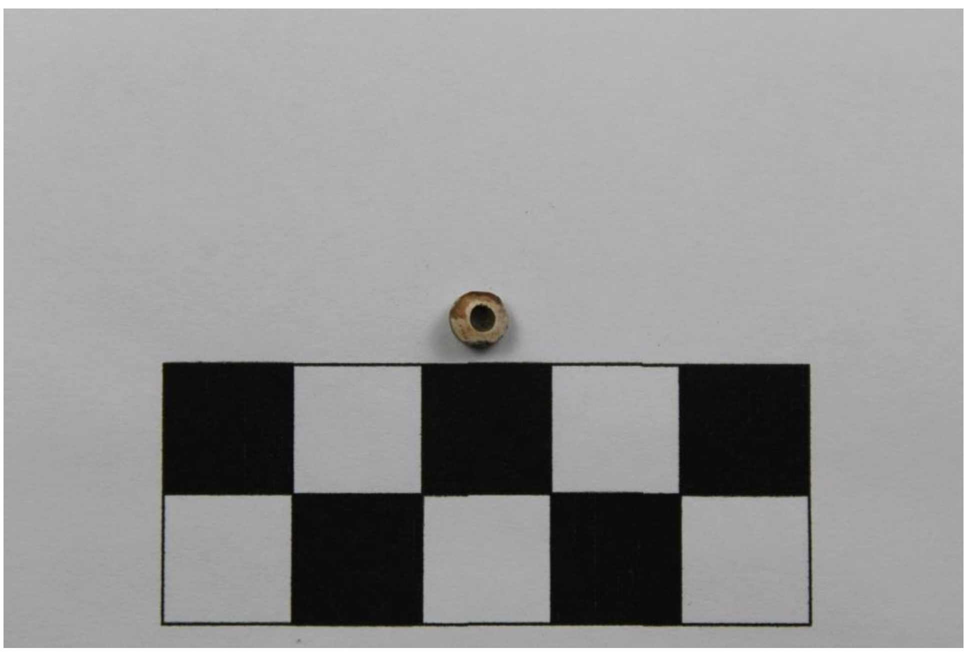


Figure 274: AC 1524-3292 (1988), Feature 36, Bead 1, Dorsal Side (scale in cm)

Figure 275: AC 1524-3292 (1988), Feature 36, Bead 1, Edge of Thick Bead (scale in cm)

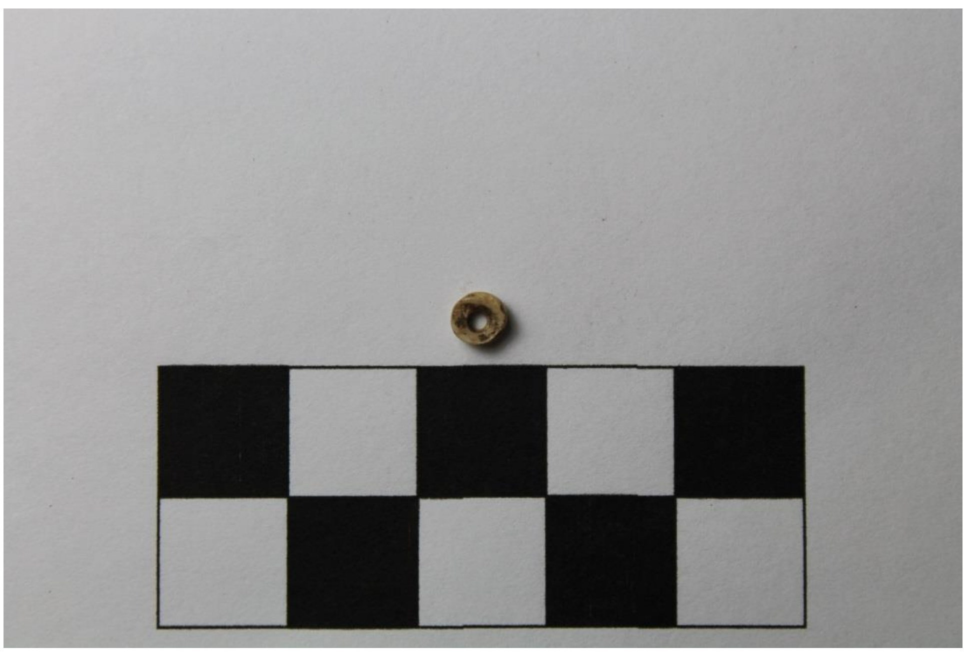


Figure 276: AC 1524-3324 (1988), Feature 26, Bead 1, Ventral Side (scale in cm)

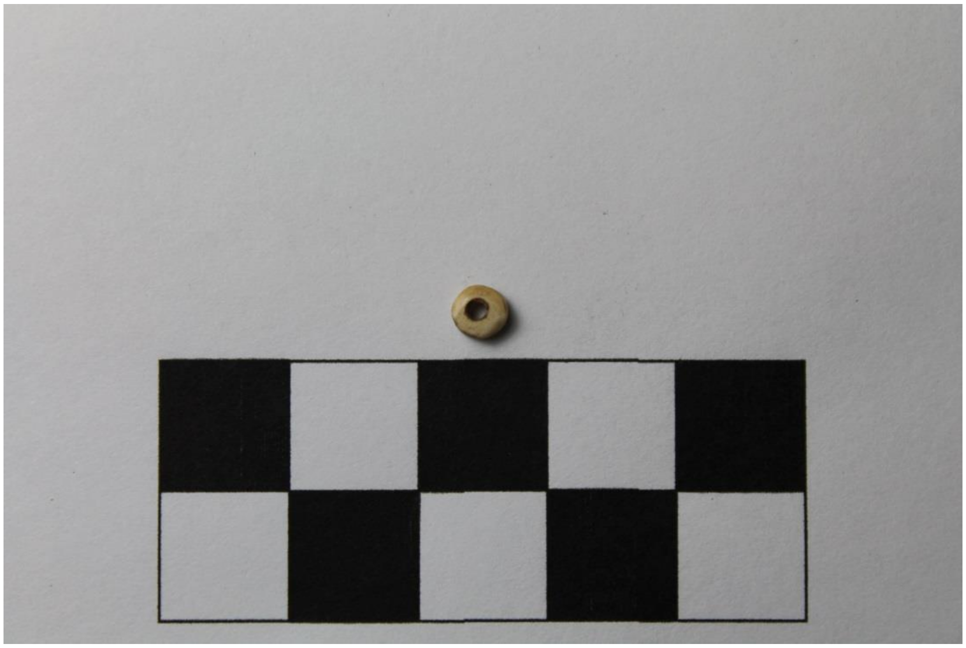


Figure 277: AC 1524-3324 (1988), Feature 26, Bead 1, Dorsal Side (scale in cm)

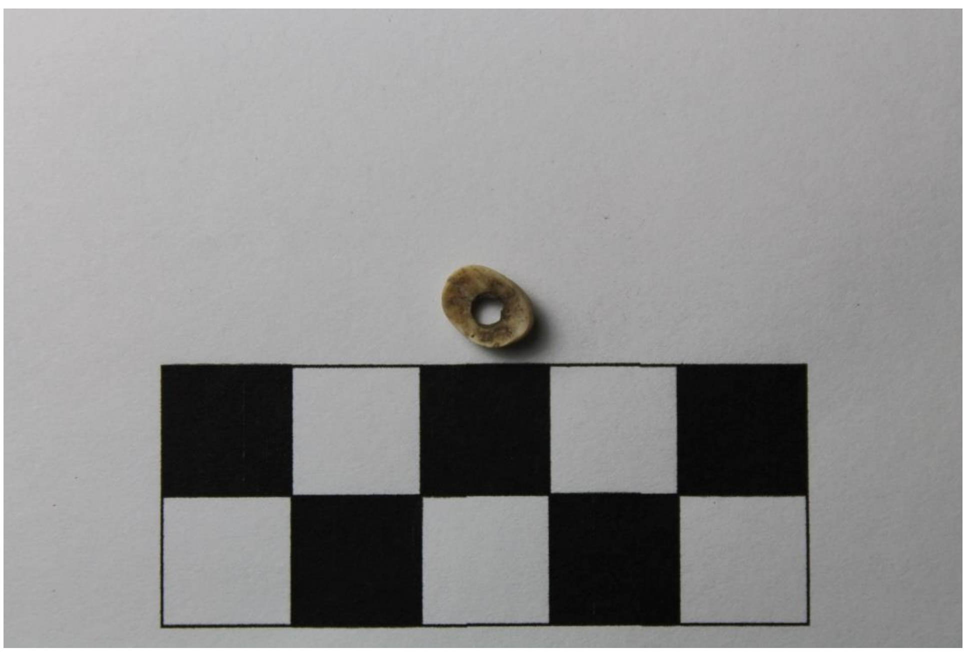


Figure 278: AC 1524-3326 (1988), Feature 26, Bead 1, Ventral Side (scale in cm)

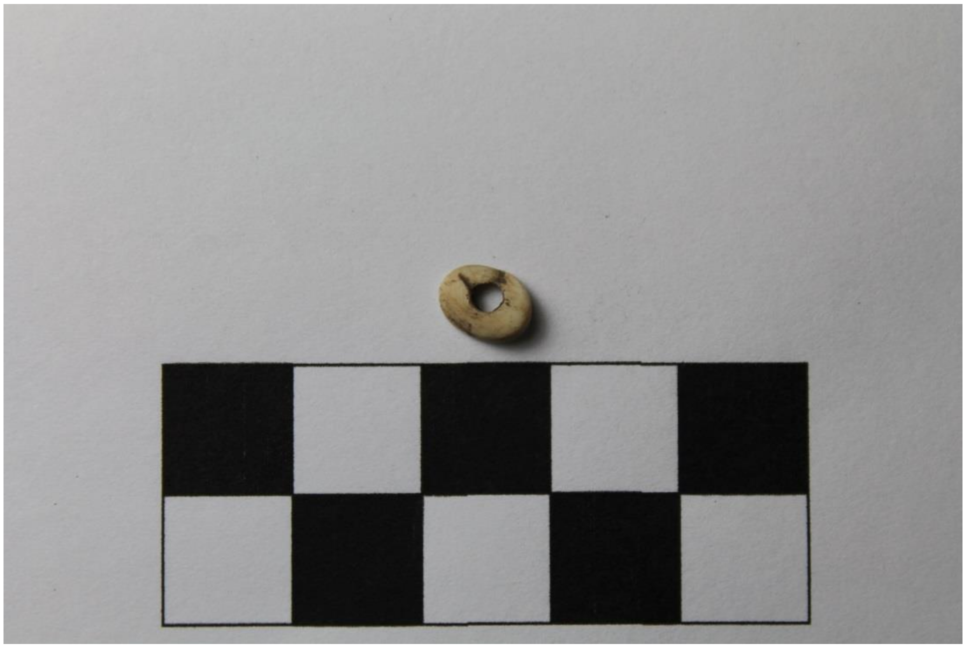


Figure 279: AC 1524-3326 (1988), Feature 26, Bead 1, Dorsal Side (scale in cm)

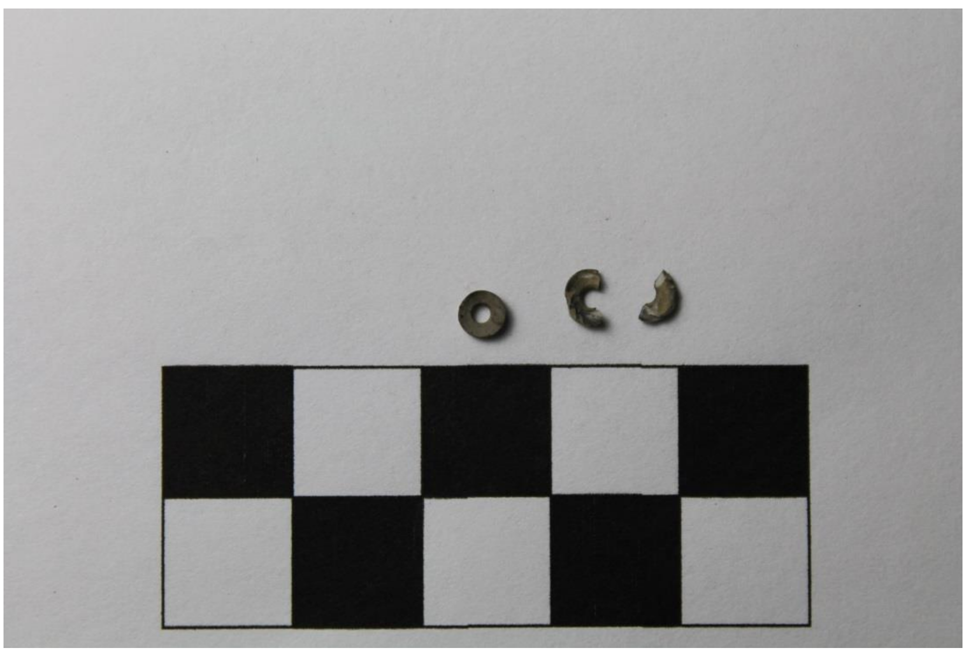


Figure 280: AC 1524-3328 (1988), Feature 26, Beads 1-2, Ventral Side (scale in cm)

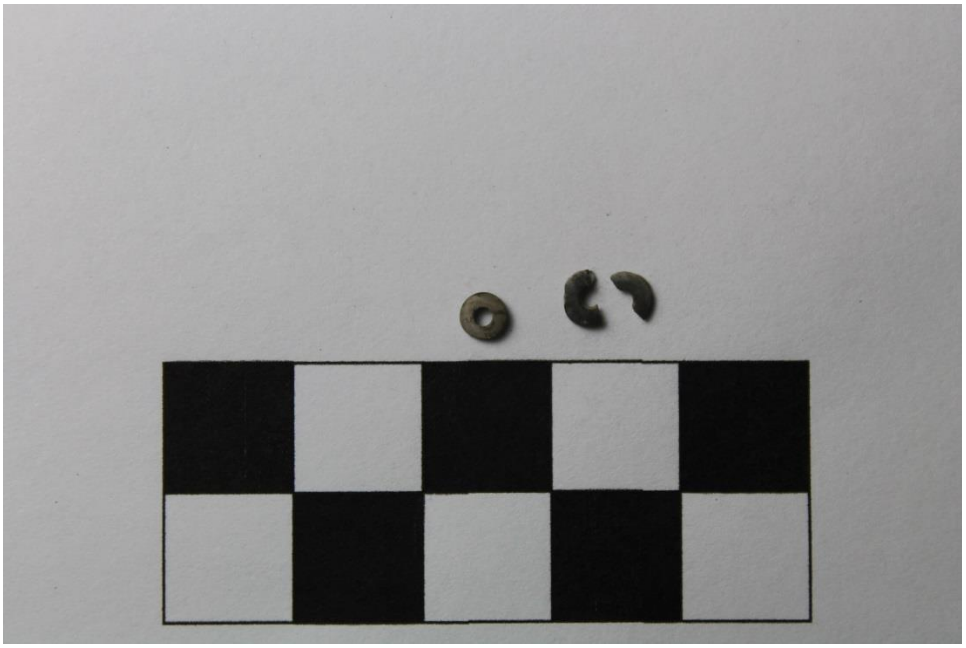


Figure 281: AC 1524-3328 (1988), Feature 26, Beads 1-2, Dorsal Side (scale in cm)

Figure 282: AC 1524-3360 (1988), Feature 23, Beads 1-2, Ventral Side (scale in cm)

Figure 283: AC 1524-3360 (1988), Feature 23, Beads 1-2, Dorsal Side (scale in cm)

Figure 284: AC 1524-3361 (1988), Feature 23, Beads 1-5, Ventral Side (scale in cm)

Figure 285: AC 1524-3361 (1988), Feature 23, Beads 1-5, Dorsal Side (scale in cm)

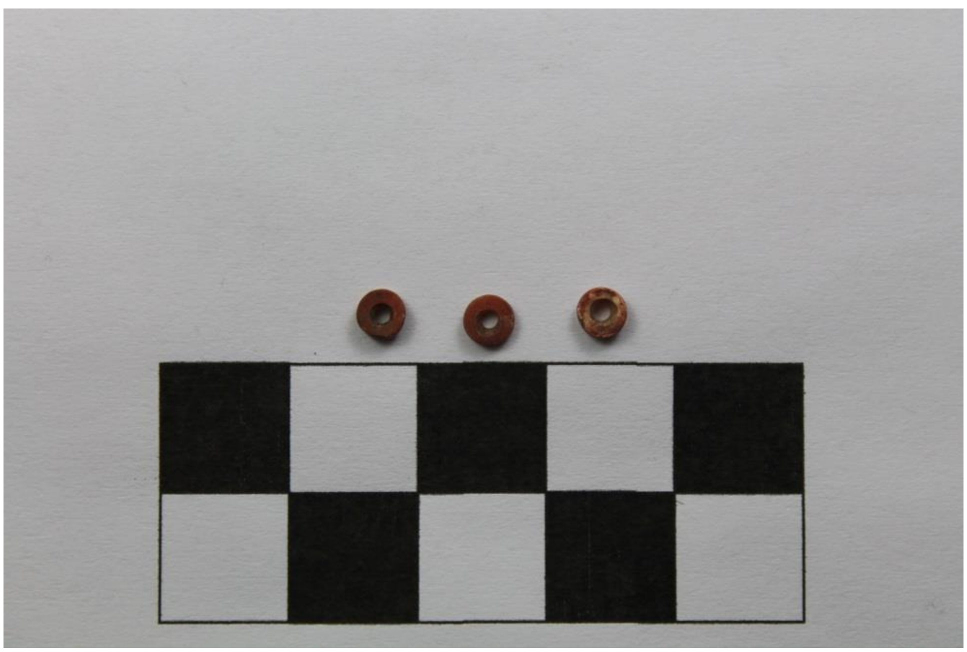


Figure 286: AC 1524-3362 (1988), Feature 23, Beads 1-3, First Side (scale in cm)

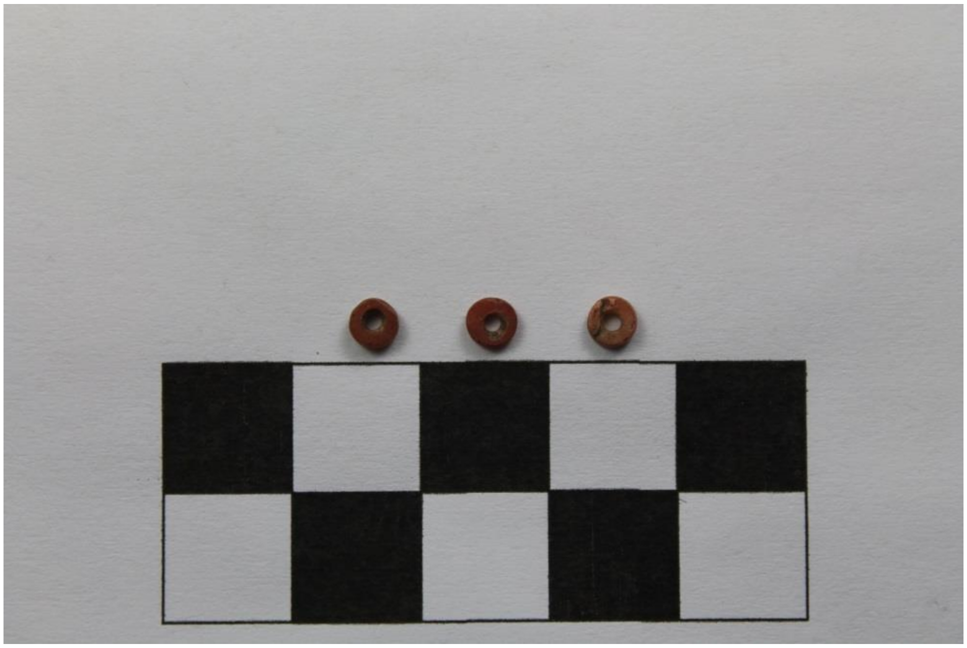


Figure 287: AC 1524-3362 (1988), Feature 23, Beads 1-3, Second Side (scale in cm)

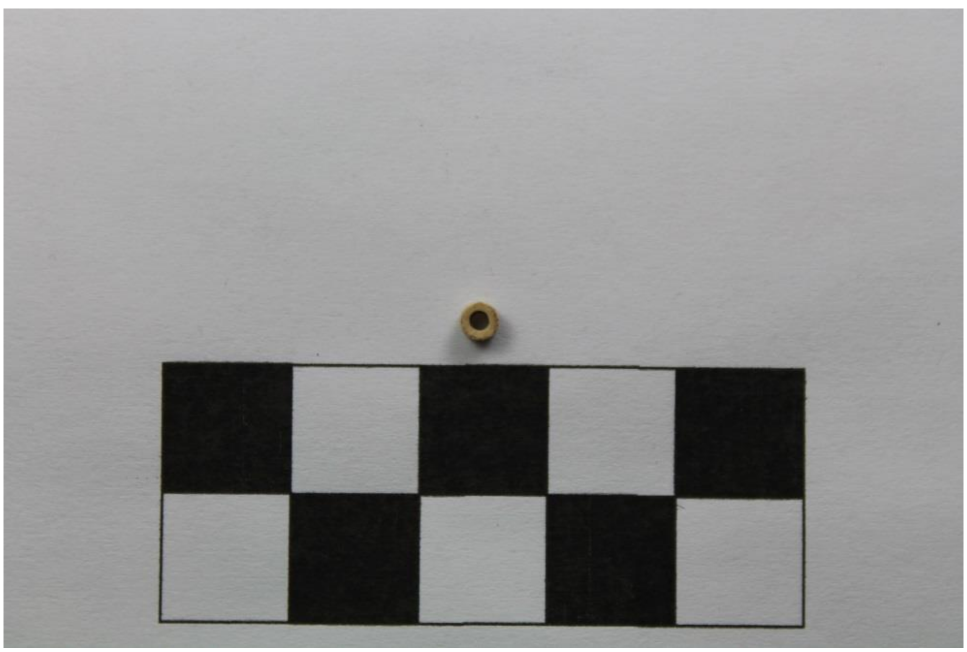


Figure 288: AC 1524-3375 (1988), Feature 23, Bead 1, Ventral Side (scale in cm)

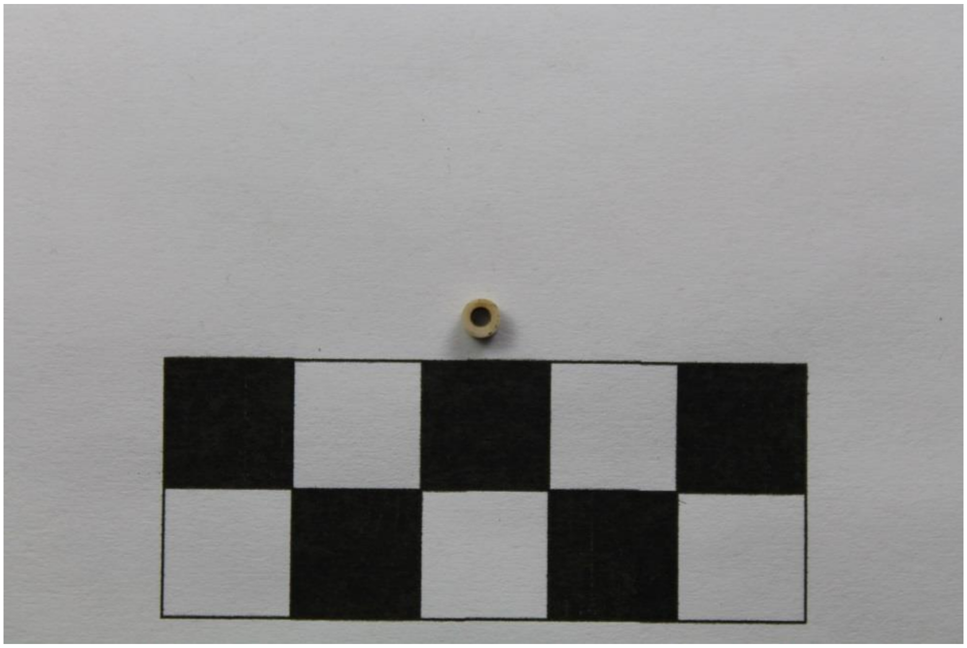


Figure 289: AC 1524-3375 (1988), Feature 23, Bead 1, Dorsal Side (scale in cm)

Figure 290: AC 1524-3375 (1988), Feature 23, Bead 1, Edge of Thick Bead (scale in cm)

Excavation Year 1989

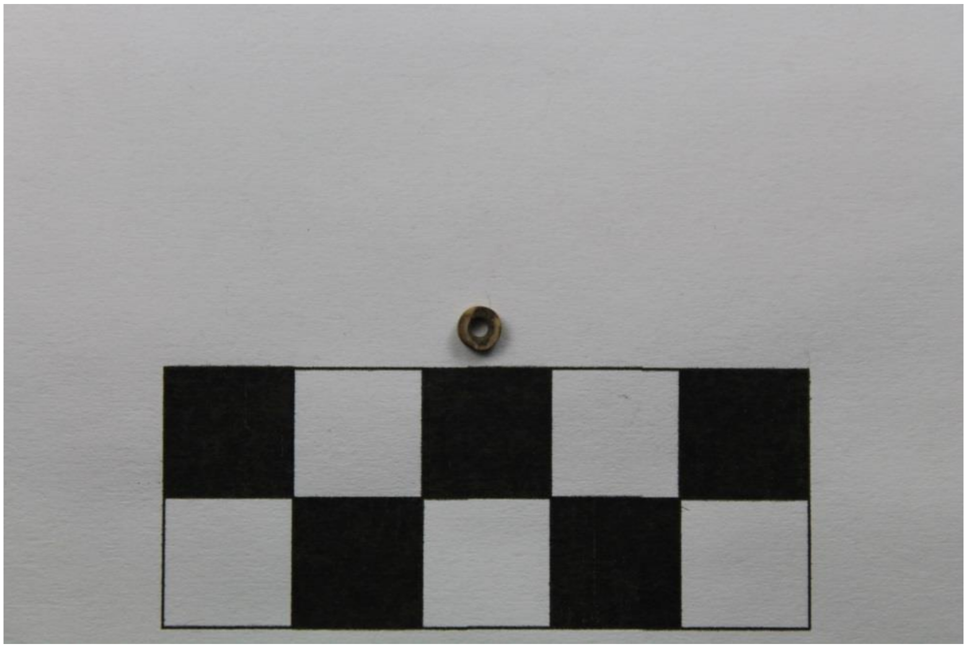


Figure 291: AC 1524-00310 (1989), Feature 107, Bead 1, Ventral Side (scale in cm)

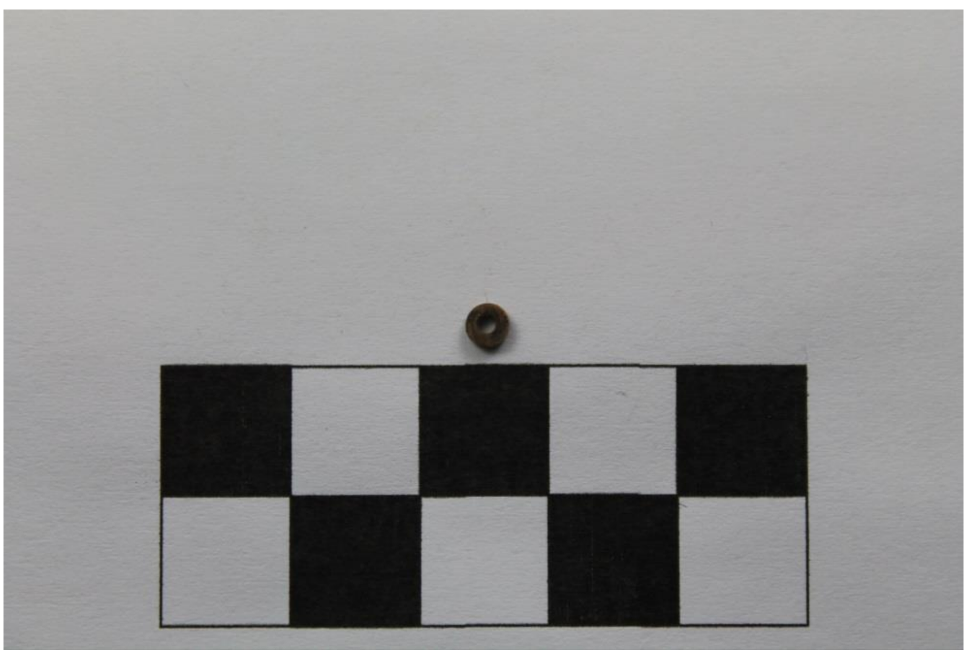


Figure 292: AC 1524-00310 (1989), Feature 107, Bead 1, Dorsal Side (scale in cm)

Figure 293: AC 1524-00333 (1989), Feature 104, Bead 1, Ventral Side (scale in cm)

Figure 294: AC 1524-00333 (1989), Feature 104, Bead 1, Dorsal Side (scale in cm)

Figure 295: AC 1524-00333 (1989), Feature 104, Beads 2-3, Ventral Side (scale in cm)

Figure 296: AC 1524-00333 (1989), Feature 104, Beads 2-3, Dorsal Side (scale in cm)

Figure 297: AC 1524-00350 (1989), Feature 111, Beads 1-3, Ventral Side (scale in cm)

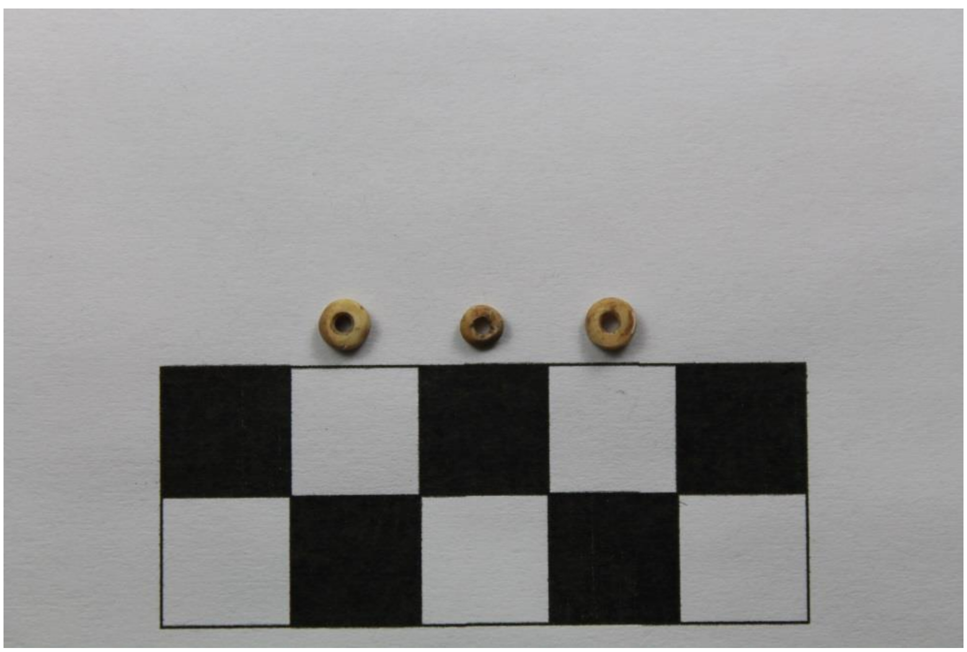


Figure 298: AC 1524-00350 (1989), Feature 111, Beads 1-3, Dorsal Side (scale in cm)

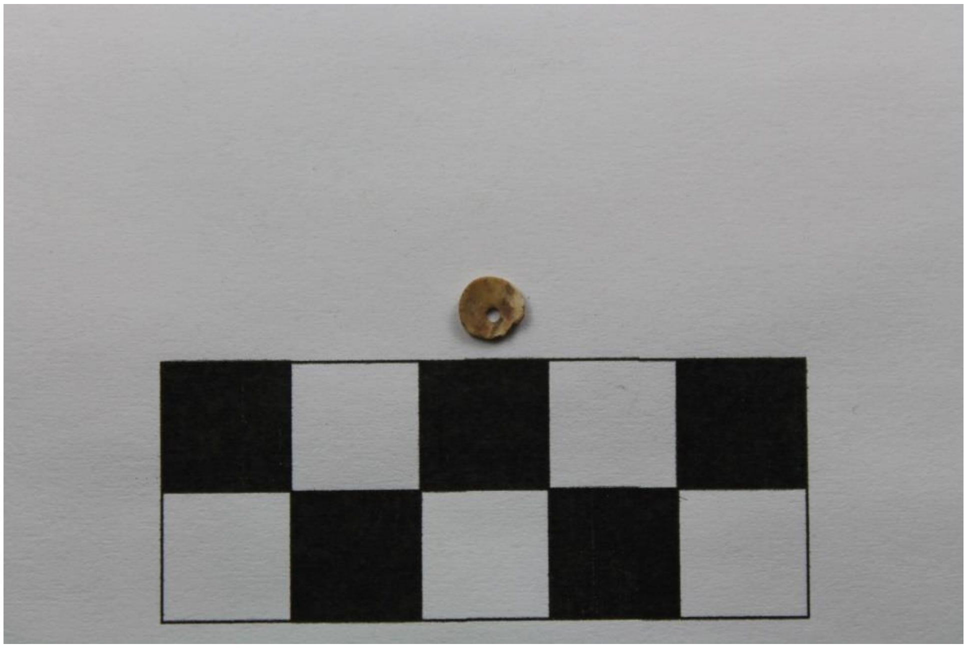


Figure 299: AC 1524-00371 (1989), Feature 98, Bead 1, Ventral Side (scale in cm)

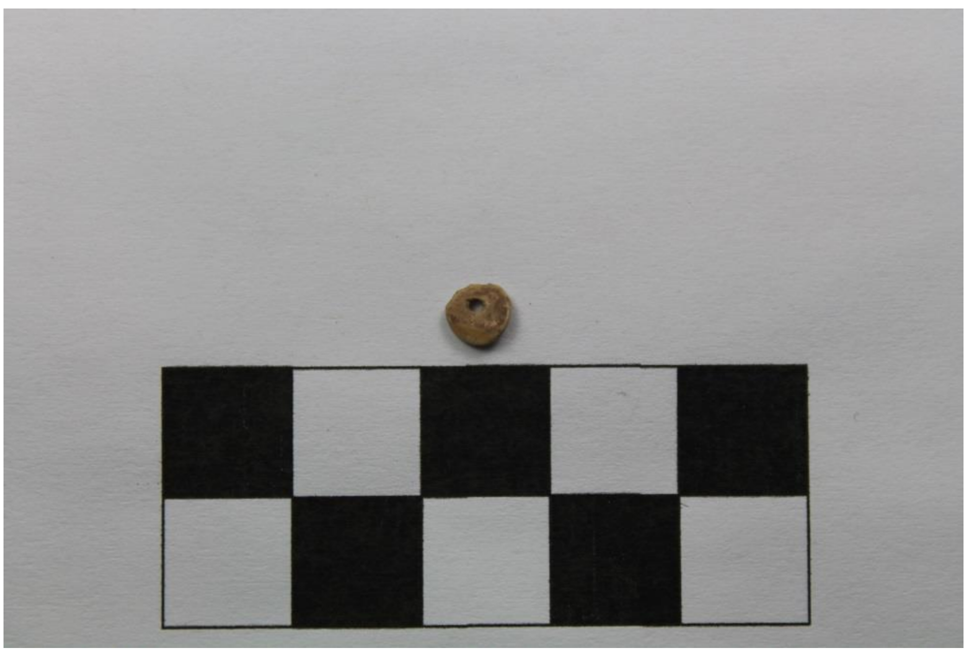


Figure 300: AC 1524-00371 (1989), Feature 98, Bead 1, Dorsal Side (scale in cm)

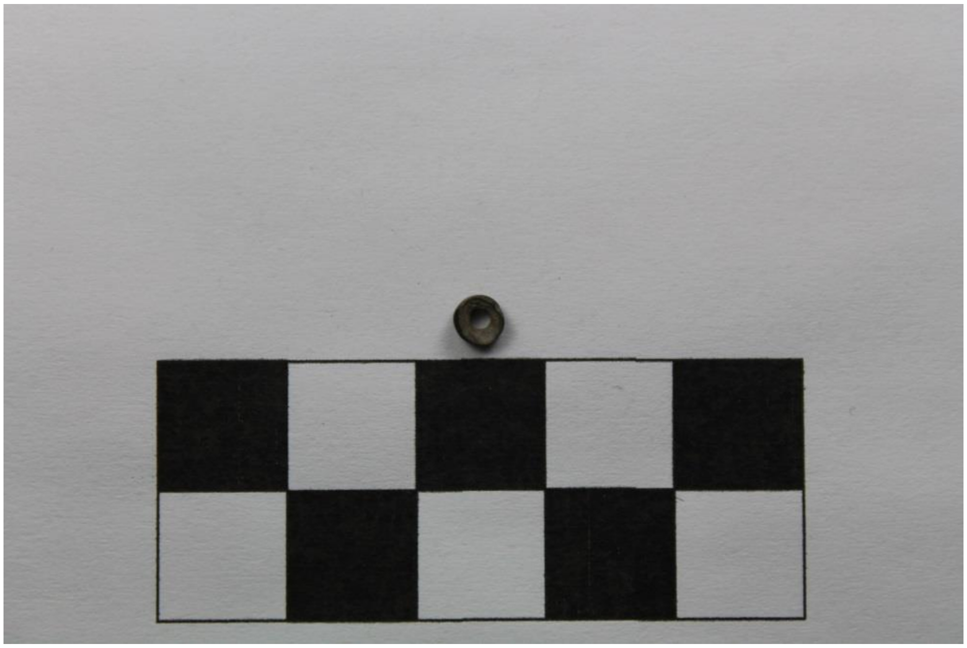


Figure 301: AC 1524-00465 (1989), Feature 100, Bead 1, Ventral Side (scale in cm)

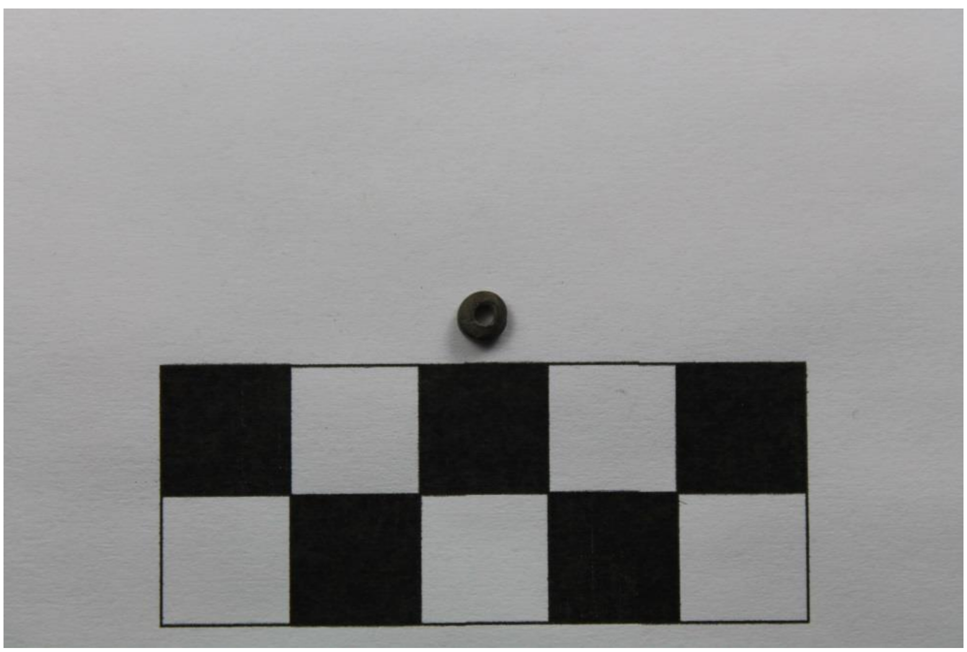


Figure 302: AC 1524-00465 (1989), Feature 100, Bead 1, Dorsal Side (scale in cm)

Figure 303: AC 1524-00604 (1989), Feature 102, Beads 1-2, Ventral Side (scale in cm)

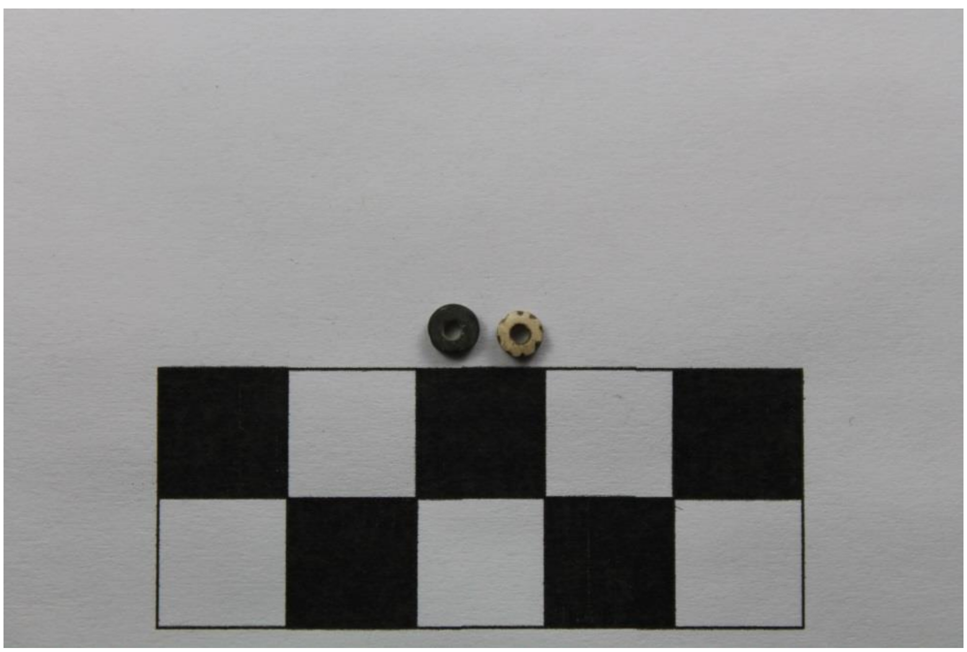


Figure 304: AC 1524-00604 (1989), Feature 102, Beads 1-2, Dorsal Side (scale in cm)

Figure 305: AC 1524-00676 (1989), Feature 118, Beads 1-8, Ventral Side (scale in cm)

Figure 306: AC 1524-00676 (1989), Feature 118, Beads 1-8, Dorsal Side (scale in cm)

Figure 307: AC 1524-00676 (1989), Feature 118, Unmeasured Bead (scale in cm)

Figure 308: AC 1524-00713 (1989), Feature 32, Beads 1-3, Ventral Side (scale in cm)

Figure 309: AC 1524-00713 (1989), Feature 32, Beads 1-3, Dorsal Side (scale in cm)

Figure 310: AC 1524-00713 (1989), Feature 32, Unmeasured Beads (scale in cm)

Figure 311: AC 1524-00864 (1989), Feature 129, Beads 1-3, Ventral Side (scale in cm)

Figure 312: AC 1524-00864 (1989), Feature 129, Beads 1-3, Dorsal Side (scale in cm)

Figure 313: AC 1524-00897 (1989), Feature 27, Beads 1-10, Ventral Side (scale in cm)

Figure 314: AC 1524-00897 (1989), Feature 27, Beads 1-10, Dorsal Side (scale in cm)

Figure 315: AC 1524-00897 (1989), Feature 27, Beads 11-20, Ventral Side (scale in cm)

Figure 316: AC 1524-00897 (1989), Feature 27, Beads 11-20, Dorsal Side (scale in cm)

Figure 317: AC 1524-00897 (1989), Feature 27, Beads 21-24, Ventral Side (scale in cm)

Figure 318: AC 1524-00897 (1989), Feature 27, Beads 21-24, Dorsal Side (scale in cm)

Figure 319: AC 1524-00898 (1989), Feature 27, Beads 1-10, Ventral Side (scale in cm)

Figure 320: AC 1524-00898 (1989), Feature 27, Beads 1-10, Dorsal Side (scale in cm)

Figure 321: AC 1524-00898 (1989), Feature 27, Beads 1-10, Edge of Some Thick Beads (scale in cm)

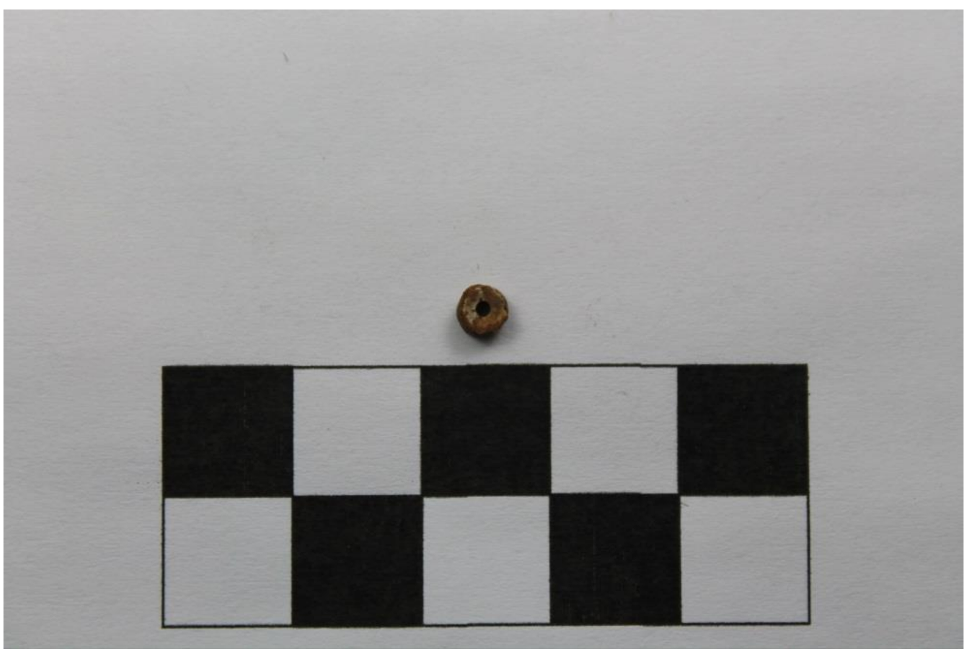


Figure 322: AC 1524-00899 (1989), Feature 27, Beads 1-2 (glued together), Ventral Side (scale in cm)

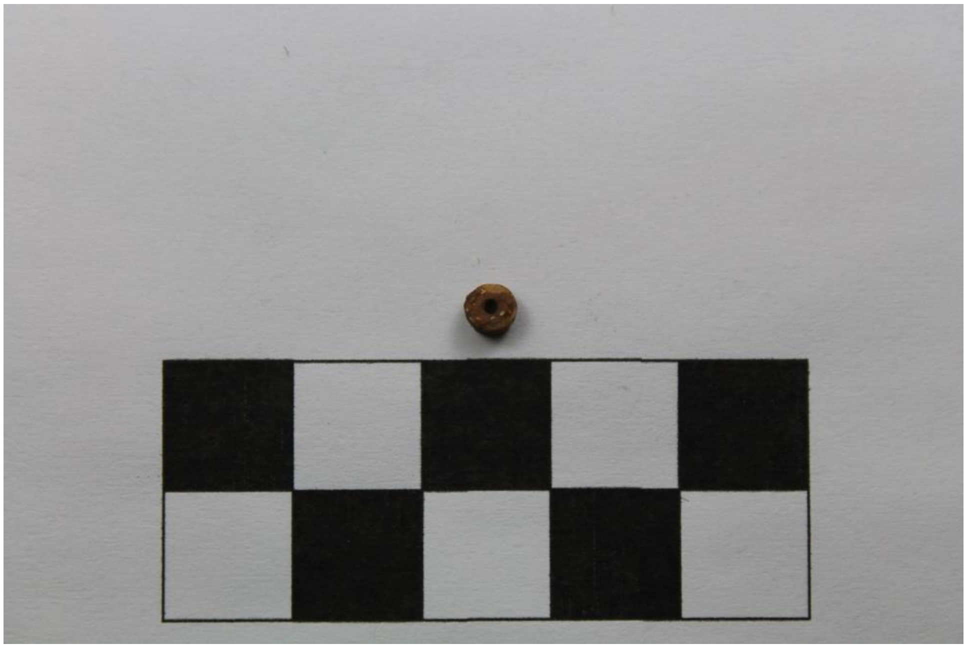


Figure 323: AC 1524-00899 (1989), Feature 27, Beads 1-2 (glued together), Dorsal Side (scale in cm)

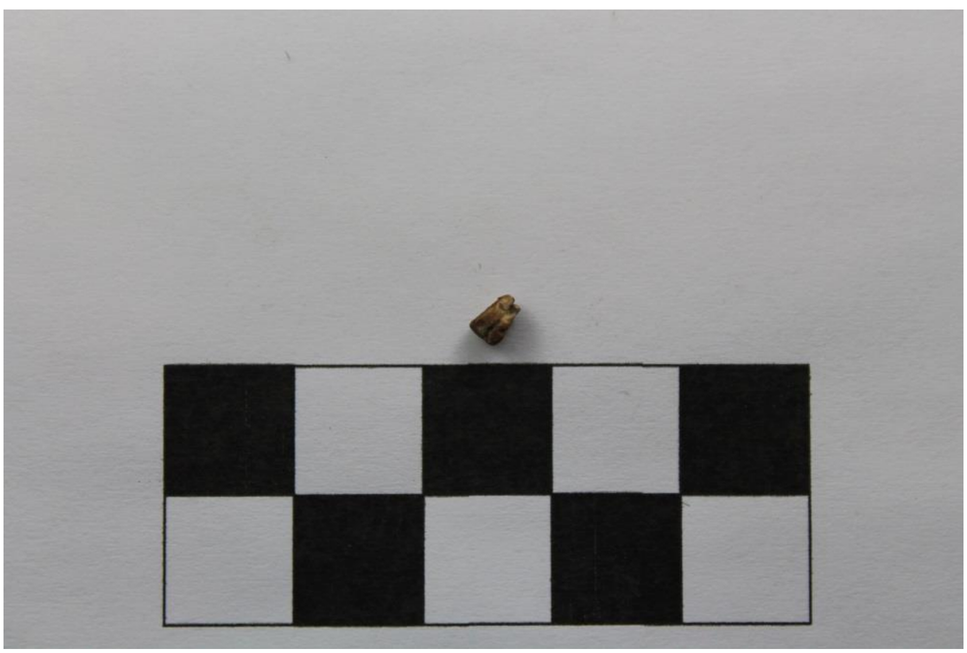


Figure 324: AC 1524-00899 (1989), Feature 27, Beads 1-2 (glued together), Edge of Beads (scale in cm)

Figure 325: AC 1524-00926 (1989), Feature 126, Beads 1-3, Ventral Side (scale in cm)

Figure 326: AC 1524-00926 (1989), Feature 126, Beads 1-3, Dorsal Side (scale in cm)

Figure 327: AC 1524-00999 (1989), Feature 131, Bead 1, Ventral Side (scale in cm)

Figure 328: AC 1524-00999 (1989), Feature 131, Bead 1, Dorsal Side (scale in cm)

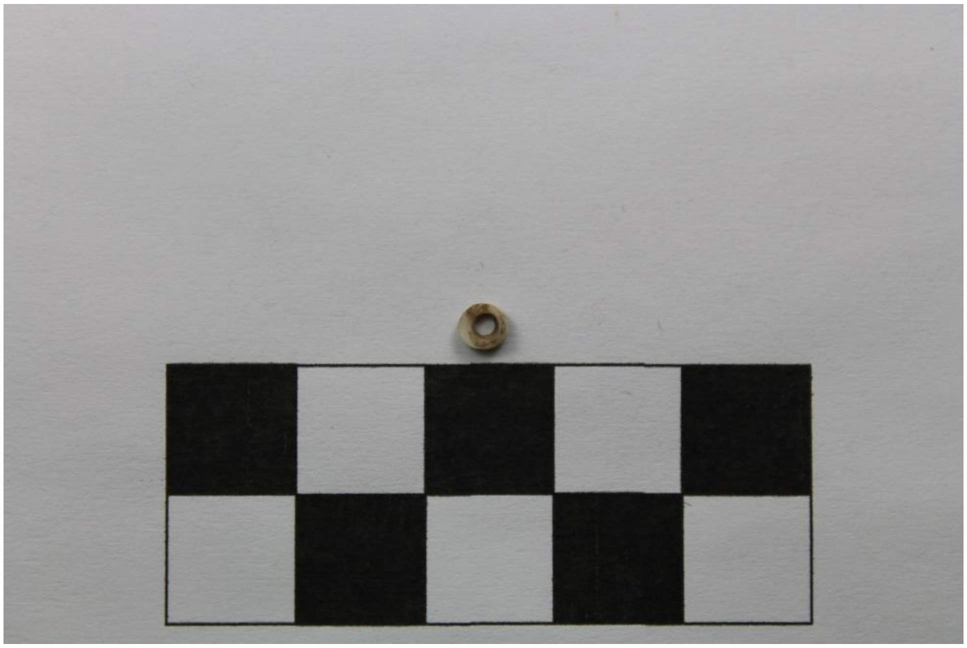


Figure 329: AC 1524-00999 (1989), Feature 131, Bead 2, Ventral Side (scale in cm)

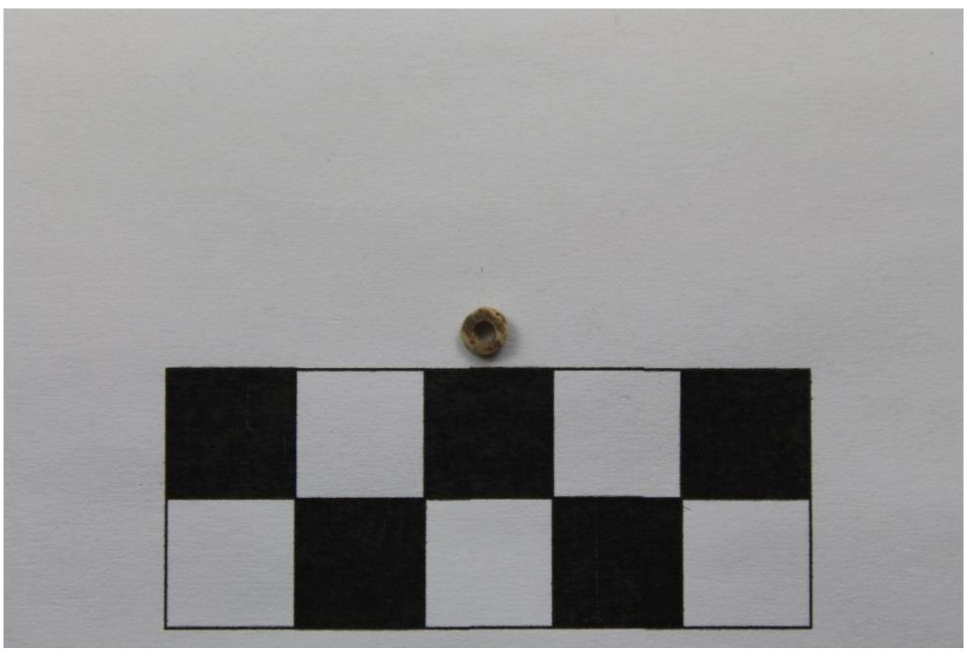


Figure 330: AC 1524-00999 (1989), Feature 131, Bead 2, Dorsal Side (scale in cm)

Figure 331: AC 1524-00999 (1989), Feature 131, Bead 2, Edge of Thick Bead (scale in cm)

Figure 332: AC 1524-01023 (1989), Feature 137, Beads 1-10, Ventral Side (scale in cm)

Figure 333: AC 1524-01023 (1989), Feature 137, Beads 1-10, Dorsal Side (scale in cm)

Figure 334: AC 1524-01023 (1989), Feature 137, Beads 1-10, Edge of Some Thick beads (scale in cm)

Figure 335: AC 1524-01023 (1989), Feature 137, Beads 11-20, Ventral Side (scale in cm)

Figure 336: AC 1524-01023 (1989), Feature 137, Beads 11-20, Dorsal Side (scale in cm)

Figure 337: AC 1524-01023 (1989), Feature 137, Beads 21-30, Ventral Side (scale in cm)

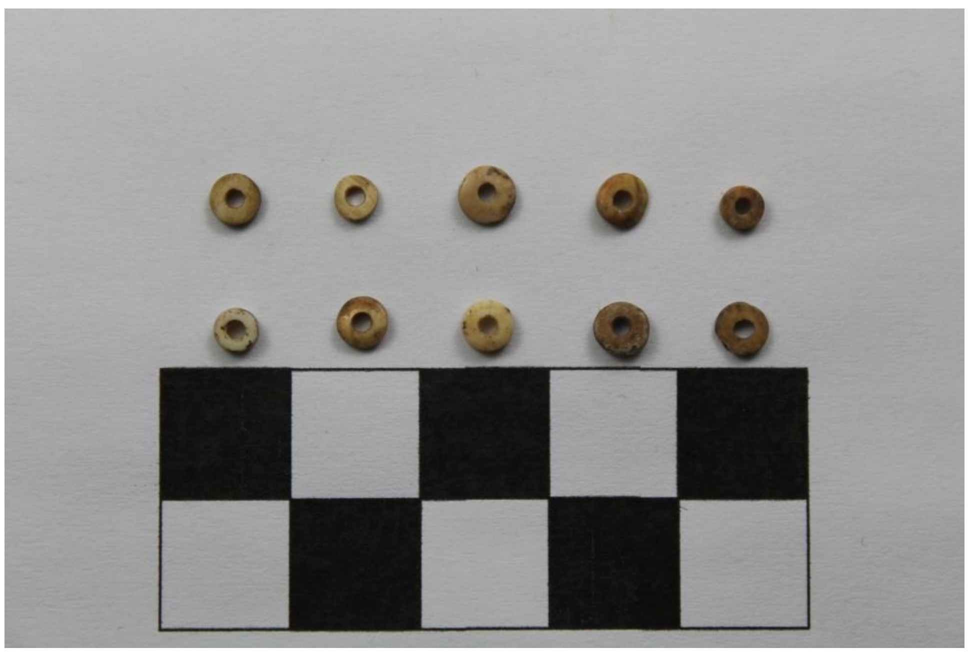


Figure 338: AC 1524-01023 (1989), Feature 137, Beads 21-30, Dorsal Side (scale in cm)

Figure 339: AC 1524-01023 (1989), Feature 137, Beads 21-30, Edge of Some Thick Beads (scale in cm)

Figure 340: AC 1524-01023 (1989), Feature 137, Beads 31-40, Ventral Side (scale in cm)

Figure 341: AC 1524-01023 (1989), Feature 137, Beads 31-40, Dorsal Side (scale in cm)

Figure 342: AC 1524-01023 (1989), Feature 137, Beads 31-40, Edge of Some Thick Beads (scale in cm)

Figure 343: AC 1524-01023 (1989), Feature 137, Beads 41-42, Ventral Side (scale in cm)

Figure 344: AC 1524-01023 (1989), Feature 137, Beads 41-42, Dorsal Side (scale in cm)

Figure 345: AC 1524-01023 (1989), Feature 137, Unmeasured Beads (scale in cm)

Figure 346: AC 1524-01023 (1989), Feature 137, Unmeasured Beads (scale in cm)

Figure 347: AC 1524-01023 (1989), Feature 137, Unmeasured Beads (scale in cm)

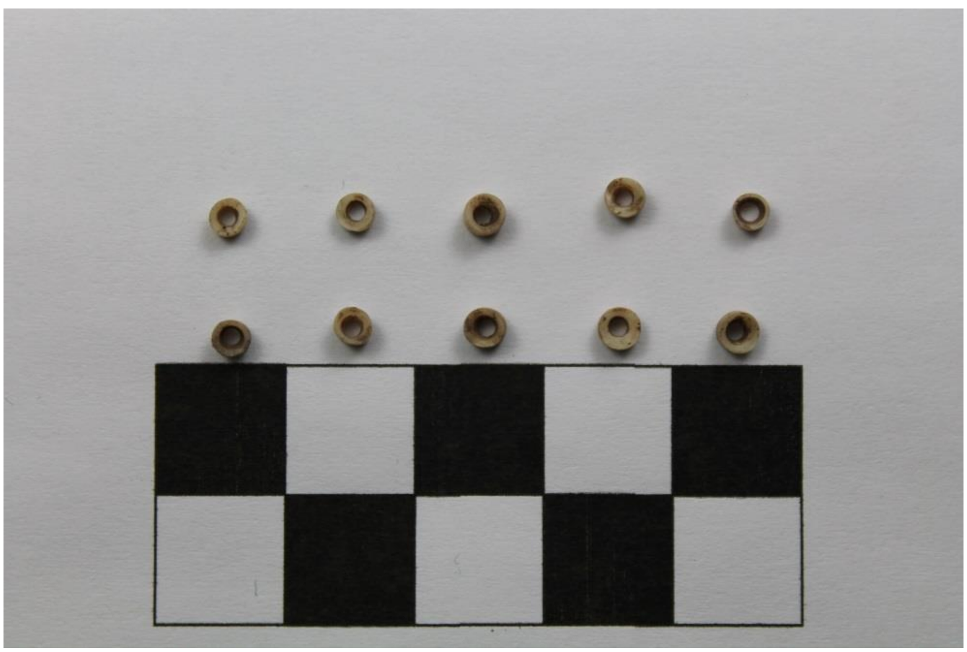


Figure 348: AC 1524-01077 (1989), Feature 139, Beads 1-10, Ventral Side (scale in cm)

Figure 349: AC 1524-01077 (1989), Feature 139, Beads 1-10, Dorsal Side (scale in cm)

Figure 350: AC 1524-01077 (1989), Feature 139, Beads 1-10, Edge of Thick Beads (scale in cm)

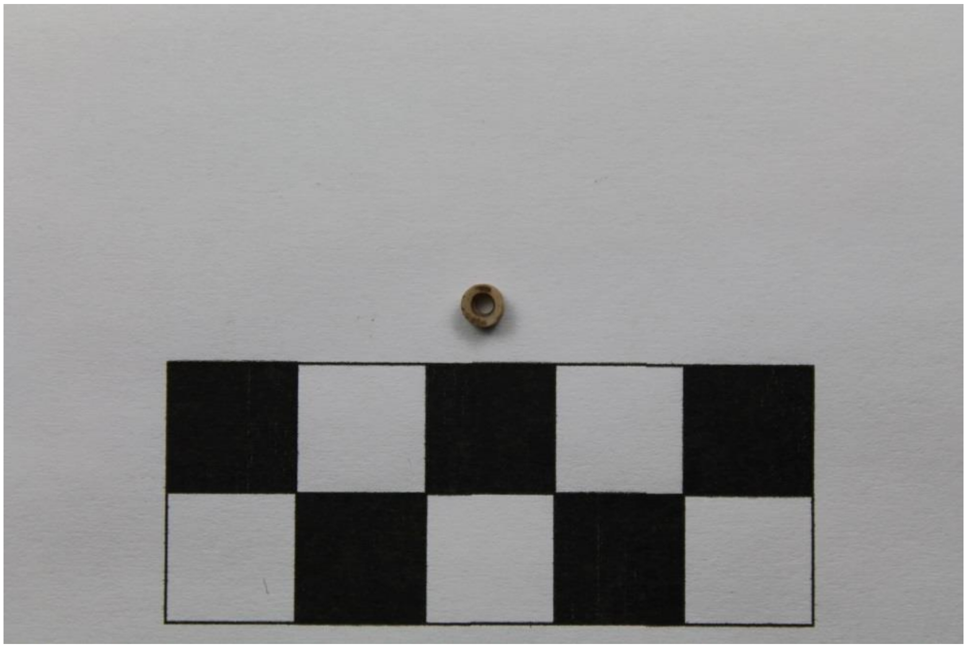


Figure 351: AC 1524-01077 (1989), Feature 139, Bead 11, Ventral Side (scale in cm)

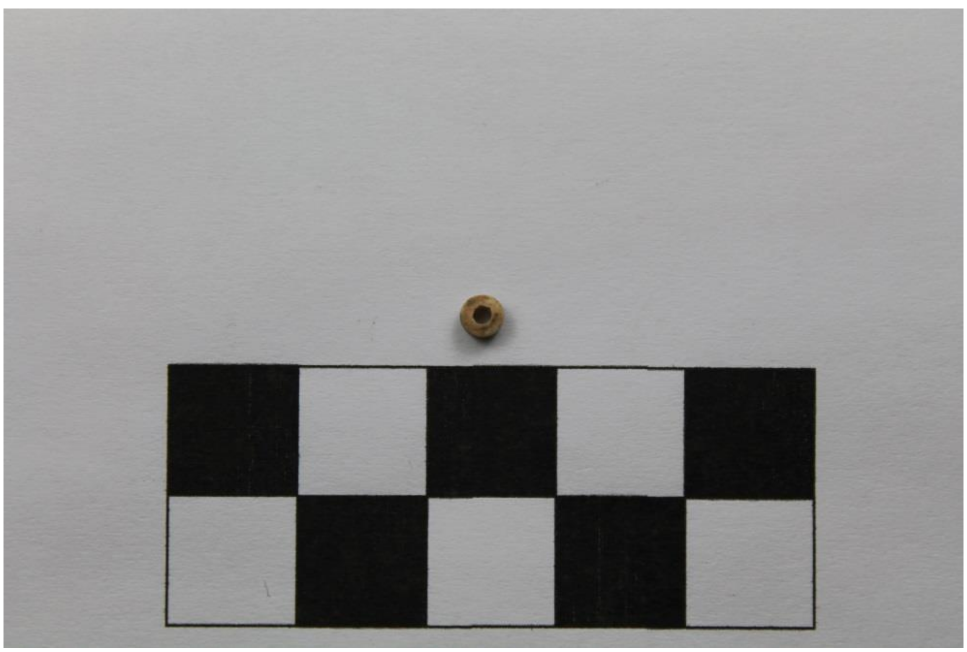


Figure 352: AC 1524-01077 (1989), Feature 139, Bead 11, Dorsal Side (scale in cm)

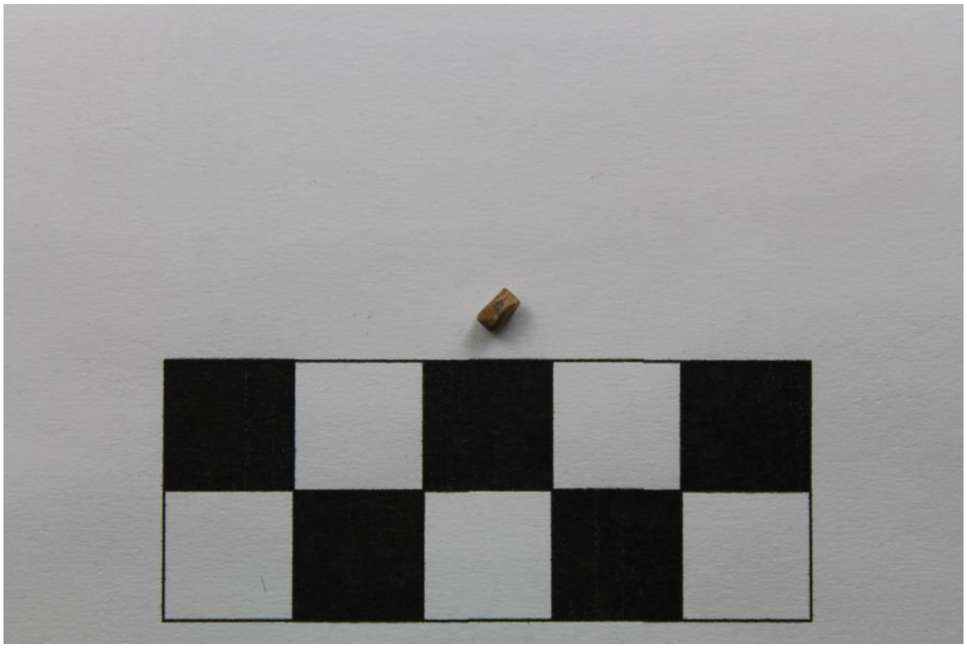


Figure 353: AC 1524-01077 (1989), Feature 139, Bead 11, Edge of Thick Bead (scale in cm)

Figure 354: AC 1524-01122 (1989), Feature 134, Beads 1-10, Ventral Side (scale in cm)

Figure 355: AC 1524-01122 (1989), Feature 134, Beads 1-10, Dorsal Side (scale in cm)

Figure 356: AC 1524-01122 (1989), Feature 134, Beads 11-20, Ventral Side (scale in cm)

Figure 357: AC 1524-01122 (1989), Feature 134, Beads 11-20, Dorsal Side (scale in cm)

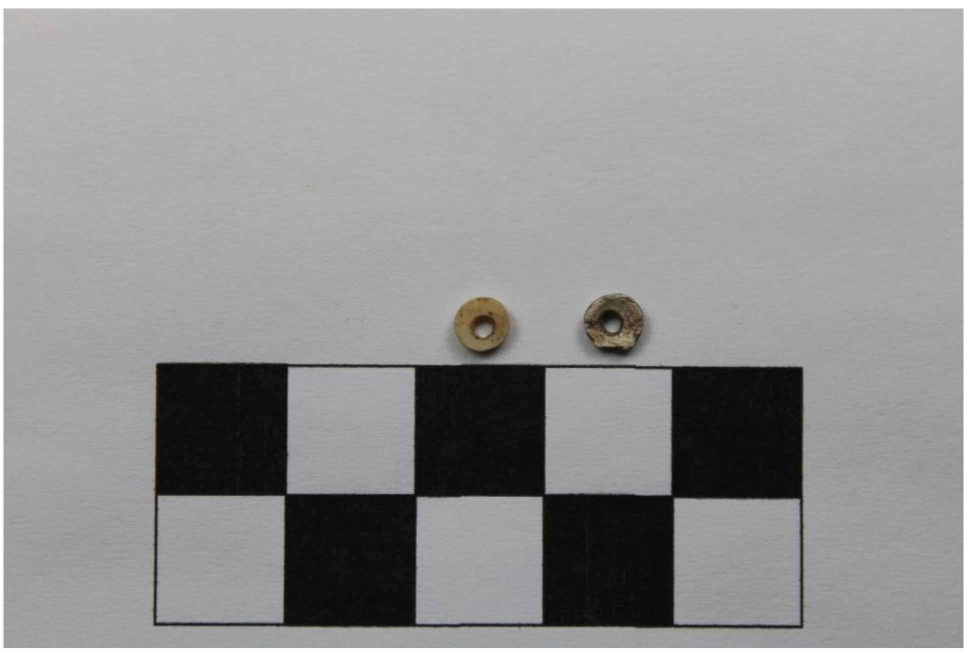


Figure 358: AC 1524-01122 (1989), Feature 134, Beads 21-22, Ventral Side (scale in cm)

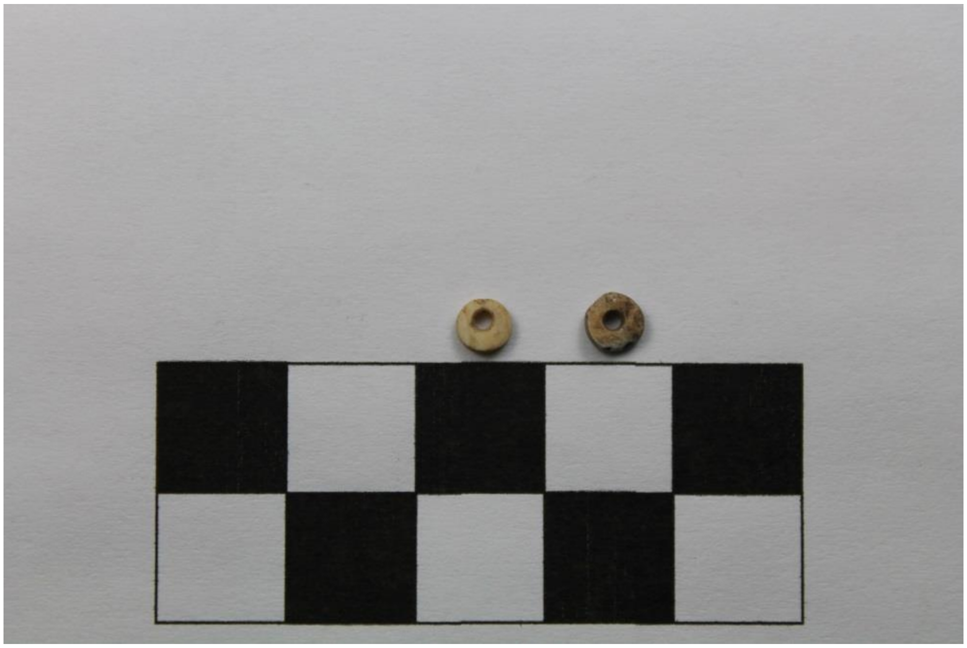


Figure 359: AC 1524-01122 (1989), Feature 134, Beads 21-22, Dorsal Side (scale in cm)

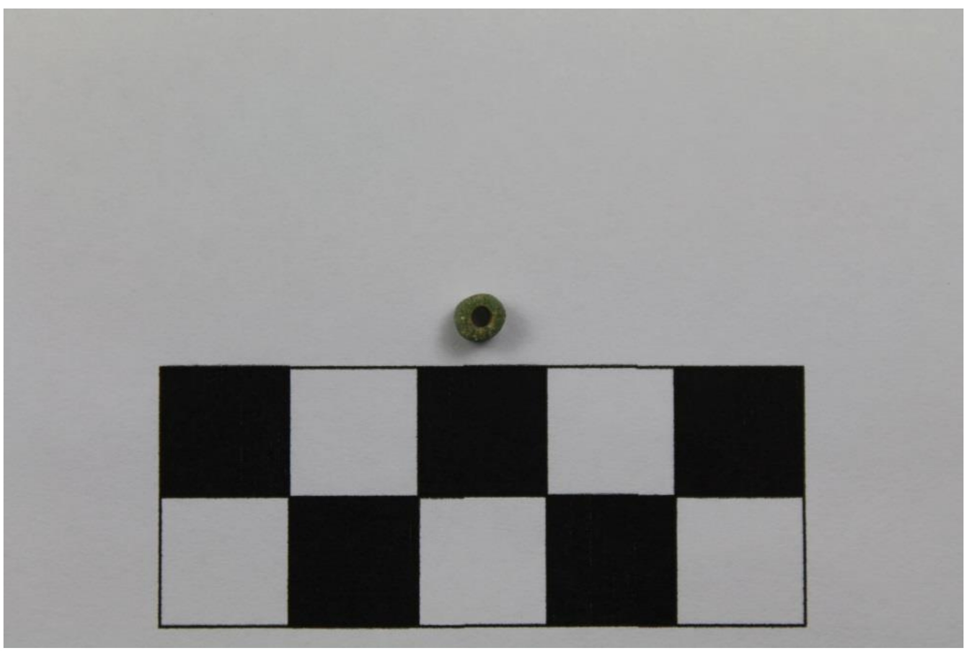


Figure 360: AC 1524-01284 (1989), Feature 121, Glass Bead, Side (scale in cm)

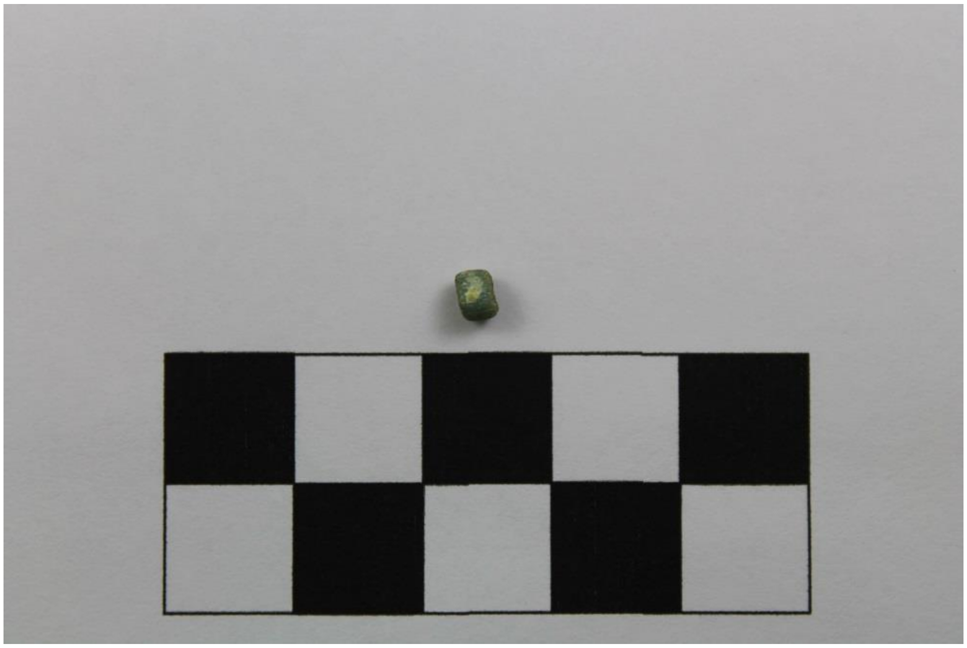


Figure 361: AC 1524-01284 (1989), Feature 121, Glass Bead, Edge (scale in cm)

Figure 362: AC 1524-01285 (1989), Feature 121, Possible Fish Vertebra Bead 1, First Side (scale in cm)

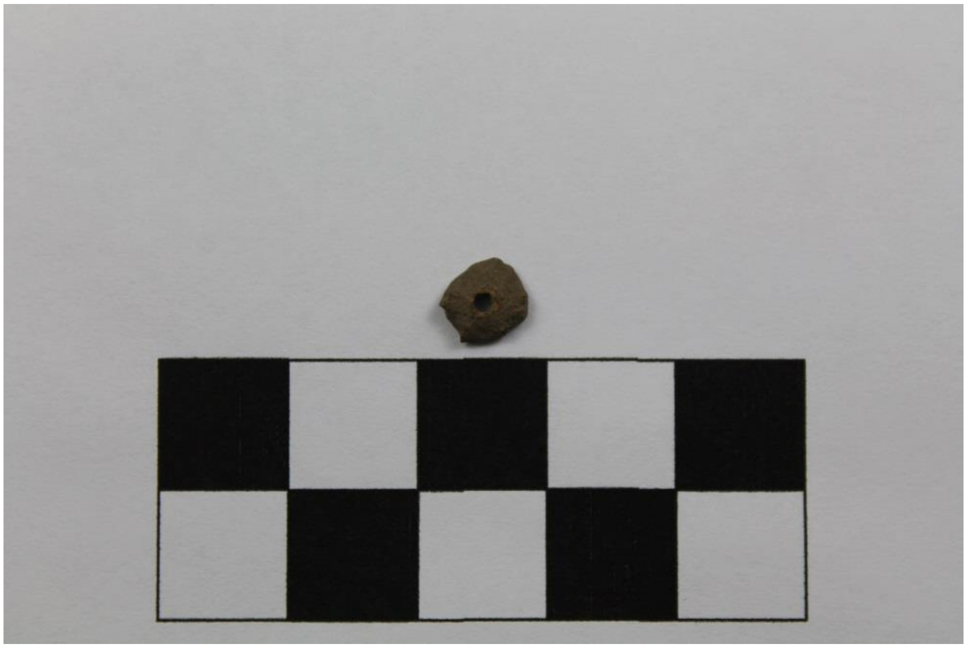


Figure 363: AC 1524-01285 (1989), Feature 121, Possible Fish Vertebra Bead 1, Second Side (scale in cm)

Figure 364: AC 1524-01286 (1989), Feature 121, Beads 1-3, First Side (scale in cm)

Figure 365: AC 1524-01286 (1989), Feature 121, Beads 1-3, Second Side (scale in cm)

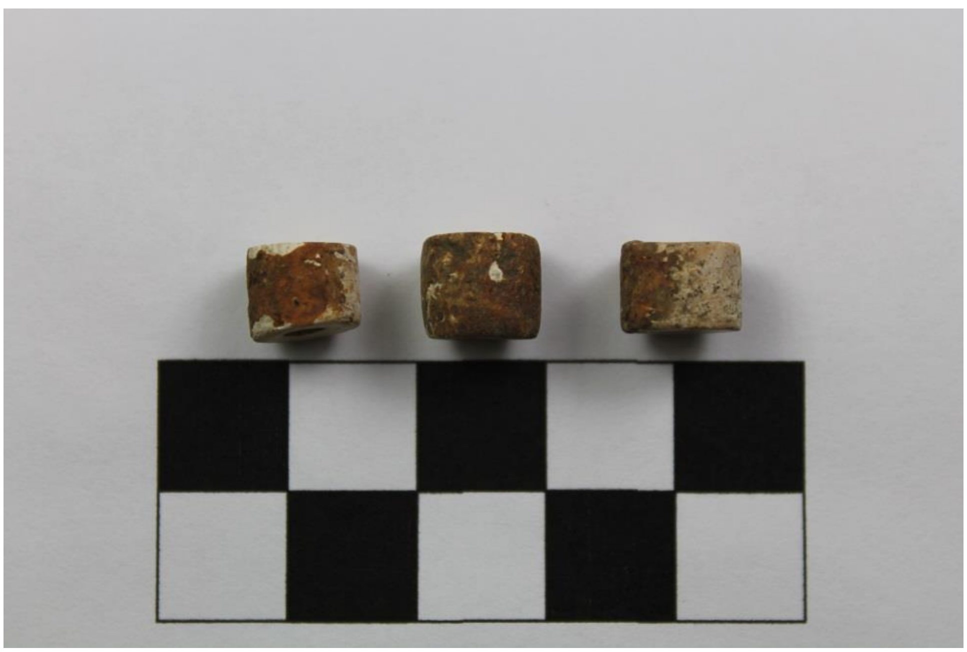


Figure 366: AC 1524-01286 (1989), Feature 121, Beads 1-3, Edge of Thick Beads (scale in cm)

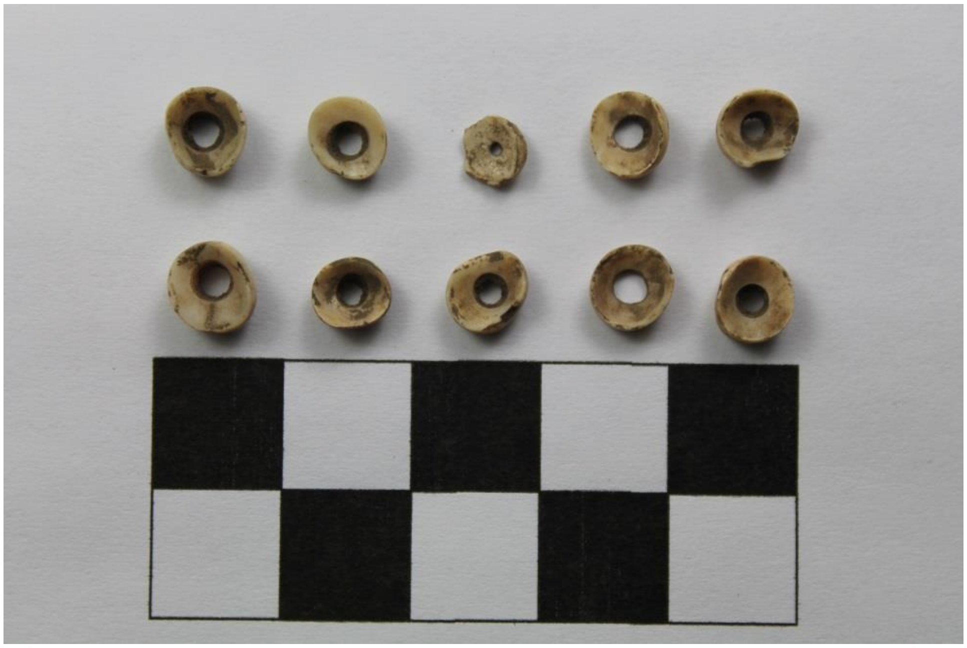


Figure 367: AC 1524-01513 (1989), Feature 41, Beads 1-10, Ventral Side (scale in cm)

Figure 368: AC 1524-01513 (1989), Feature 41, Beads 1-10, Dorsal Side (scale in cm)

Figure 369: AC 1524-01513 (1989), Feature 41, Beads 11-20, Ventral Side (scale in cm)

Figure 370: AC 1524-01513 (1989), Feature 41, Beads 11-20, Dorsal Side (scale in cm)

Figure 371: AC 1524-01513 (1989), Feature 41, Beads 21-30, Ventral Side (scale in cm)

Figure 372: AC 1524-01513 (1989), Feature 41, Beads 21-30, Dorsal Side (scale in cm)

Figure 373: AC 1524-01513 (1989), Feature 41, Beads 31-40, Ventral Side (scale in cm)

Figure 374: AC 1524-01513 (1989), Feature 41, Beads 31-40, Dorsal Side (scale in cm)

Figure 375: AC 1524-01513 (1989), Feature 41, Beads 41-50, Ventral Side (scale in cm)

Figure 376: AC 1524-01513 (1989), Feature 41, Beads 41-50, Dorsal Side (scale in cm)

Figure 377: AC 1524-01513 (1989), Feature 41, Unmeasured Beads (scale in cm)

Figure 378: AC 1524-01513 (1989), Feature 41, Unmeasured Beads (scale in cm)

Figure 379: AC 1524-01513 (1989), Feature 41, Unmeasured Beads (scale in cm)

Figure 380: AC 1524-01513 (1989), Feature 41, Unmeasured Beads (scale in cm)

Figure 381: AC 1524-01513 (1989), Feature 41, Unmeasured Beads (scale in cm)

Figure 382: AC 1524-01513 (1989), Feature 41, Unmeasured Beads (scale in cm)

Figure 383: AC 1524-01513 (1989), Feature 41, Unmeasured Beads (scale in cm)

Figure 384: AC 1524-01513 (1989), Feature 41, Unmeasured Beads (scale in cm)

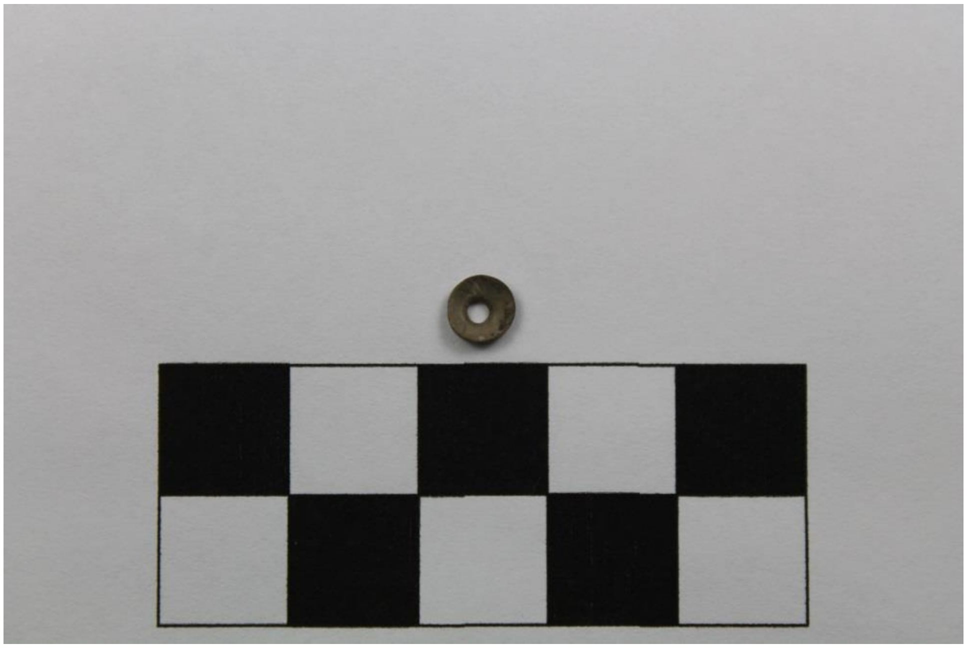


Figure 385: AC 1524-01531 (1989), Feature 138, Bead 1, Ventral Side (scale in cm)

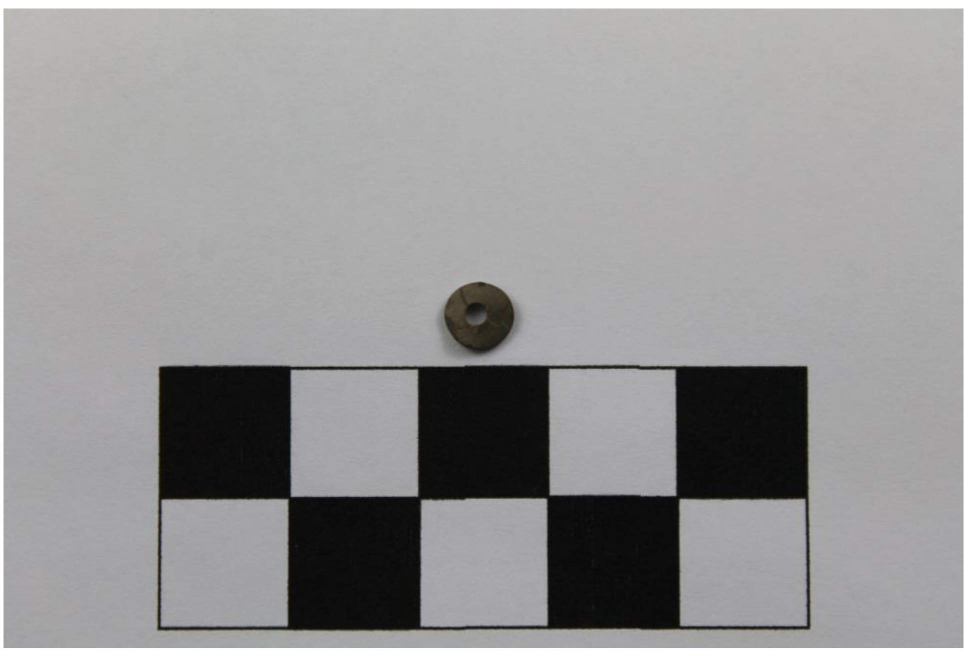


Figure 386: AC 1524-01531 (1989), Feature 138, Bead 1, Dorsal Side (scale in cm)

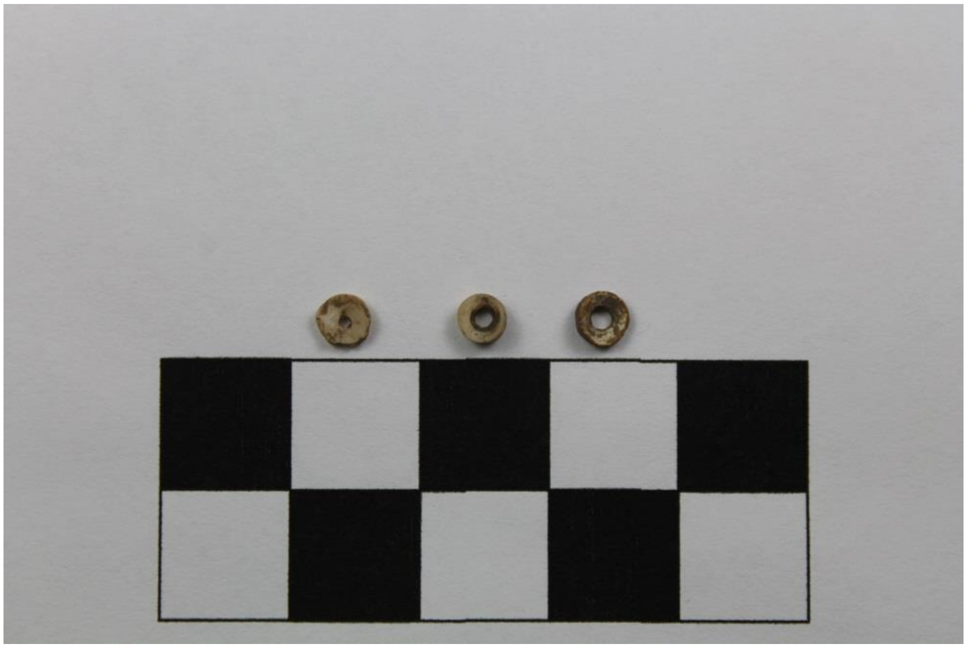


Figure 387: AC 1524-01575 (1989), Feature 121, Beads 1-3, Ventral Side (scale in cm)

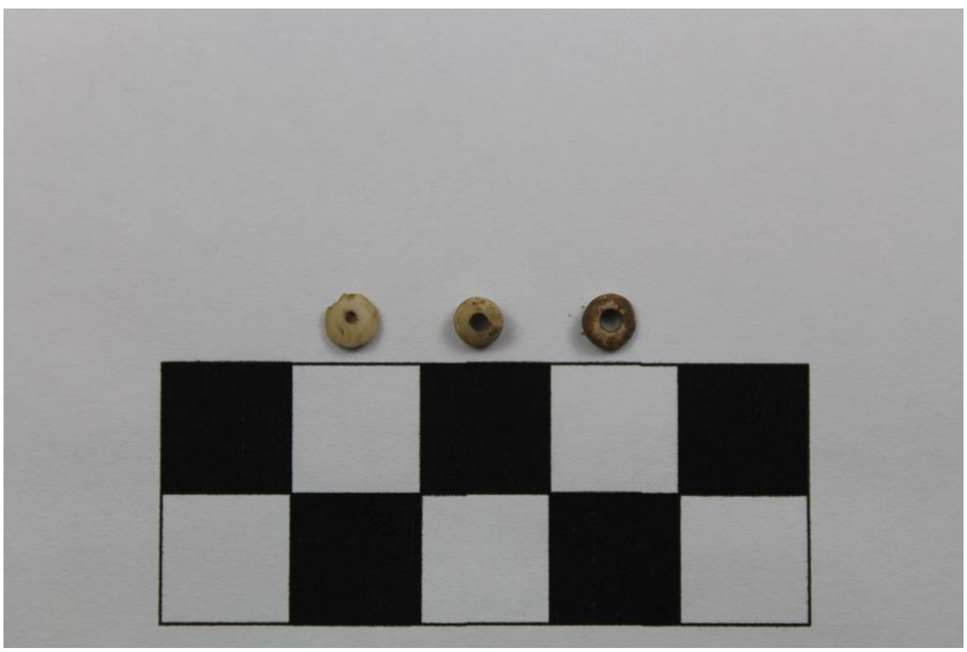


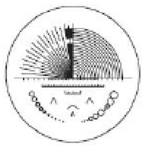
Figure 388: AC 1524-01575 (1989), Feature 121, Beads 1-3, Dorsal Side (scale in cm)

Figure 389: AC 1524-01575 (1989), Feature 121, Beads 1-3, Edge of Some Thick Beads (scale in cm)

APPENDIX C: INSTRUMENT SPECIFICATIONS

1-800-363-1992 | www.edmundoptics.com

27mm Diameter, Multi Scale, Contact Reticle



Stock No. #30-585

Availability: IN STOCK

$60.00

1 - 1 for $60.00 each.
2 - 5 for $55.00 each.

Specifications

Type	Multi Scale
Diameter (mm)	27.00
Diameter Tolerance (mm)	±0.05
Thickness (mm)	2.28
Thickness Tolerance (mm)	±0.127
Line Thickness (μm)	25
Line Thickness Tolerance (μm)	±13
Surface Flatness	3 - 4λ
Surface Quality	60-40
Centering (mm)	0.25
Line to Line Accuracy (μm)	±2
Angle Tolerance (arcsec)	±1
RoHS	C

Figure 390: Edmund Optics 27mm Diameter Multi Scale Contact Reticle Instrument Specifications