

## CONVERSION AND PERSISTENCE: ANALYSIS OF FAUNAL REMAINS FROM AN EARLY SPANISH COLONIAL DOCTRINAL SETTLEMENT IN HIGHLAND PERU

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*Initial Spanish colonization of the Central Andes and efforts to transform indigenous society were highly dependent on local social and geographic conditions. In the Colca Valley of southern Peru, Franciscan friars established a series of doctrinas (settlements for the conversion and doctrinal instruction of the indigenous population) at former Inka imperial outposts during the mid-1540s. The inhabitants of one of these doctrinas—the site today known as Malata (ca. A.D. 1545–1573)—were subject to one of the earliest mendicant evangelical campaigns in the Central Andean highlands. In addition to religious indoctrination and significant spatial reconfiguration of the village, Spaniards attempted to alter systems of domestic production related to the rearing and consumption of animals. They also imposed new tribute demands. Despite considerable transformations of the architecture and attendant changes in daily life at Malata, zooarchaeological analysis of faunal remains from a variety of contexts provides no indication of the introduction of Eurasian animals to Malata nor the alteration of either indigenous husbandry practices or the consumption of food animals. Ceramic iconography and the abundance of weaving tools suggest that Spaniards built on the local system of camelid husbandry to extract textiles and metallurgical goods as tribute during the first generation of colonial occupation.*

*La temprana colonización española de los Andes Centrales y los esfuerzos para transformar a la sociedad indígena fueron altamente dependientes de las condiciones sociales y geográficas locales. En el Valle del Colca, al sur de Perú, los frailes franciscanos fundaron una serie de doctrinas (aldeas para la conversión e instrucción doctrinal de la población indígena) en centros imperiales incaicos durante mediados de la década de 1540. Los habitantes de una de estas doctrinas—el sitio hoy en día conocido como Malata (ca. 1545–1573 d.C.)—fueron sometidos a una de las campañas evangélicas mendicantes más tempranas de la sierra central andina. Además del adoctrinamiento religioso y la significativa reconfiguración espacial del pueblo, los españoles trataron de alterar los sistemas de producción doméstica relacionados con la cría y el consumo de los animales, así como también impusieron nuevas exigencias de tributo. A pesar de las considerables transformaciones en la arquitectura y los cambios concomitantes en la vida cotidiana en Malata, el análisis zooarqueológico de una variedad de contextos revela que no se introdujeron animales de Eurasia a Malata, así como no se alteraron las prácticas indígenas de cría y consumo de animales. Sin embargo, la abundancia de herramientas de tejer, en conjunto con la iconografía cerámica, sugiere que los españoles aprovecharon el sistema local de la cría de camélidos para extraer tejidos y productos metalúrgicos como tributo durante la primera generación de ocupación colonial.*

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**T**he initial Spanish colonization of the Andes and attempts to transform indigenous society were highly variable in their effects, depending on conjunctions of local demographic, political, economic, and ideological processes. Following the conquest of the Inkas, some of the first sustained Spanish efforts at colonization were by the mendicant religious orders, which sought

to convert the native population to Catholicism. But conversion within the Spanish Catholic frame signified more than religious indoctrination; it was to include a more holistic reorientation toward a Christian lifestyle—a cultural conversion that would necessarily entail the inculcation of new domestic practices and proprieties (Cummins 2002; Gose 2008; Wernke 2013a). Such a reori-

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entation included the introduction of foodways familiar to the colonists and facilitated the extraction of goods of value to Spaniards. These colonizing impulses, however, encountered the exigencies of local implementation and required significant resources and personnel. Implementation of Spanish policies was also constrained by the diverse and challenging geography of the Central Andean region. Similar to other areas of the Spanish Americas (Deagan 2003; Graham 2011; see also Thomas 1991), the ideal of conversion was inevitably compromised through pastoral engagement with Andean communities, as clergy variably sought to align local traditions with Catholicism (Estenssoro 2001; MacCormack 1991; Mills 1997).

This paper presents a chronologically controlled case study from the first generation after the Spanish invasion, when such processes were just beginning. We report on the faunal remains from an early highland Franciscan *doctrina* (settlement for the conversion and instruction of the indigenous population and administration of the sacraments)—a context in which Spanish attempts to alter local systems of domestic production related to the rearing of animals and their use are undetectable in the archaeological record.

The *doctrina* of Malata, established in the location of a small village and minor Inka imperial outpost in the upper reaches of the Colca Valley of southern highland Peru (Figure 1), is an example of an early effort to establish a Spanish presence in the highlands in the early years of the Viceroyalty of Peru. The *doctrina* was likely established in the 1540s. It was occupied only until the forced resettlement of the population into a *reducción* (reduction) above the modern village of Tuti in 1573 as part of the *visita general* (general tour and inspection) of the Viceroy Francisco de Toledo. During its brief use life of about 30 years as a *doctrina* (ca. A.D. 1545–1573), its domestic, public, and ritual architecture, and the pathways linking the settlement together, were significantly expanded and altered (Wernke 2011, 2012). New domestic compounds were added to the *doctrina*—apparently for those resettled from surrounding settlements—sometime during this three-decade period. These domestic compounds are readily distinguishable from those established during the Late Horizon (A.D. 1450–1532). The former are composed of quadrangular primary structures with

architectural details diagnostic of colonial origin and are generally placed either singly or with a single outbuilding. They are concentrated in the eastern and western extremes of the site: to the east, they are arranged in rows facing one another in the manner of streets; to the west near the chapel, they are arranged singly next to walled patios. Houses of Late Horizon origin at Malata are circular in floor plan and are arranged in multiples around central patio areas (see Wernke 2012, 2013a). They are concentrated in the center of the site, near the *kallanka* (great hall) and its associated plaza.

Together with the growth and spatial reconfiguration of Malata through its brief occupation during the early Spanish colonial era, its inhabitants experienced one of the first waves of religious and political transformation in the Central Andes along with the imposition of extractive enterprises. Domestic space and material culture were key forums and media in the merging of Spanish colonial practices and preexisting indigenous forms of sociality (see Wernke 2012, 2013a).

Despite these considerable transformations in the built environment and attendant changes in daily life, the zooarchaeological evidence from a variety of contexts in this *doctrina* is unambiguously consistent with the persistence of prehispanic indigenous domestic productive practices similar to those reported for other mid-elevation and highland sites dating to the Middle Horizon and later periods (e.g., deFrance 2014; Moseley et al. 2005; Rosenfeld 2011; Vallières 2012; Wing 1988). Faunal assemblages from both domestic and administrative centers are dominated by indigenous large mammals, particularly camelids. Typically, a diversity of animal taxa is rare, although some high status sites contain evidence for the use of exotic, imported, or hunted animals (see deFrance 2014). The faunal assemblage from Malata contains no indication of the introduction of Eurasian animals or alteration to indigenous husbandry practices or animal food. Food animals and systems of husbandry do not appear to have changed during this first generation after the Spanish invasion of the Andes, but an abundance of weaving paraphernalia in colonial domestic contexts suggests that Spanish demands for items of value resulted in an increase in textile production during the colonial occupation. Archival and botanical data from the likely

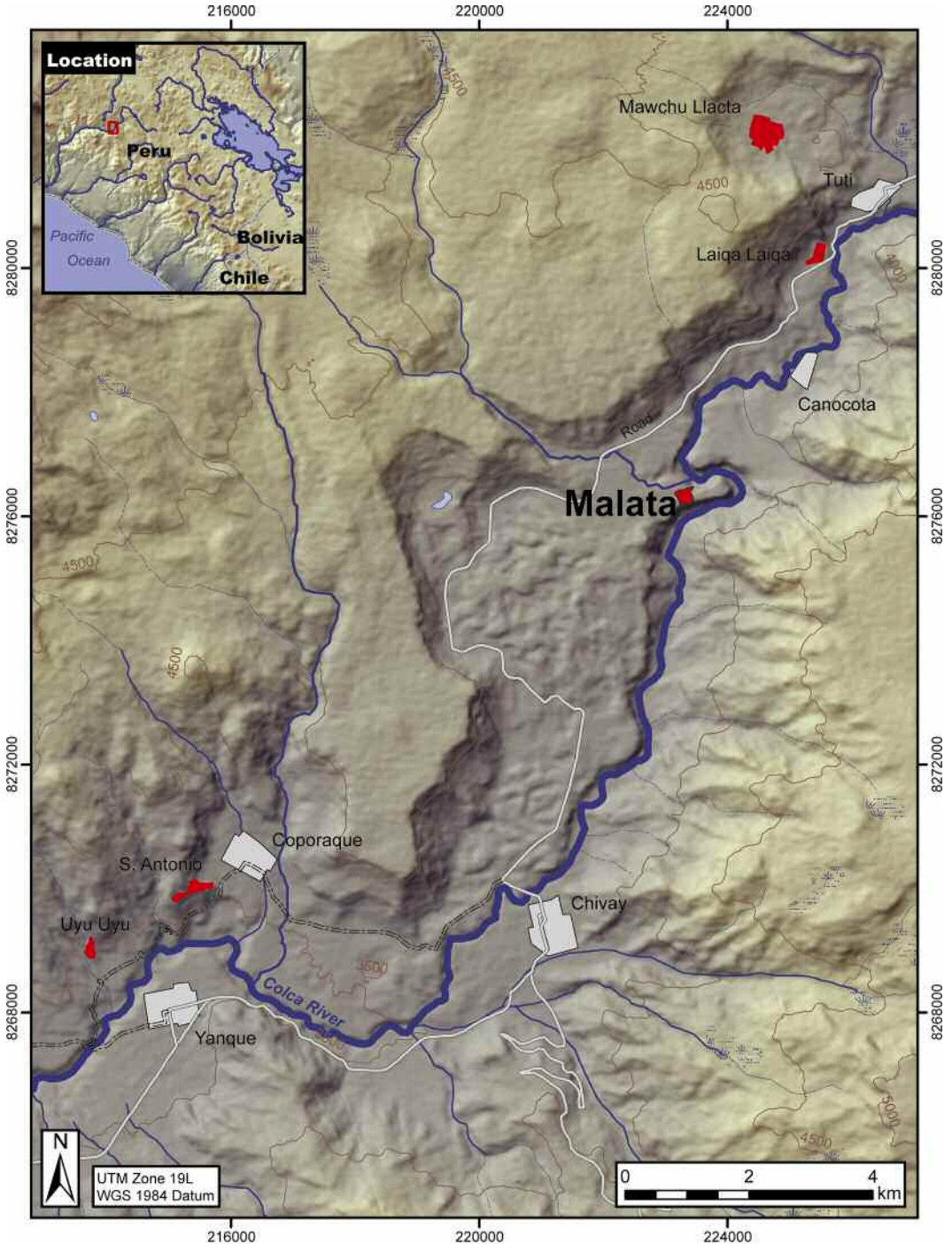


Figure 1. Site location of Malata in southern Peru.

friars’ quarters at Malata suggest that tribute to the visiting friar was probably maize, a highly esteemed crop that can be only marginally cultivated in this part of the Colca Valley (Wernke

2013b:189–190). Tribute during both Inka and colonial eras may also have included ceramic or metallurgical goods. The data presented in this study contrast with early Spanish colonial faunal

assemblages reported elsewhere in Peru and Bolivia in which introduced domesticates rapidly became a part of the local system of production (deFrance 1993, 1996, 2003, 2012; Kennedy and VanValkenburgh 2016). Analysis of the Malata faunal assemblage provides some of the first evidence of the differential degree of influence Spanish colonization had over the traditional Andean animal management practices in rural settlements.

### Historical and Archaeological Context

Malata is located at 3,850 m asl in the modern District of Tuti in the Colca Valley of Southern Peru (see Figure 1). The site is situated in the territory of the Collagua ethnic polity. The Collaguas, an Aymara-speaking people estimated to have numbered between 62,000 and 71,000 individuals on the eve of the Spanish invasion (Cook 1982:84–88), were internally divided between two large, ranked clan-like groups: the lower-ranking Laricollaguas of the central Colca Valley and the higher ranking Yanquecollaguas of the central and upper reaches of the valley (Ulloa 1965 [1586]). Malata lay within Yanquecollaguas, in a transitional zone between valley agriculture and the grazing habitats that support camelid (llama and alpaca) pastoralism. This area of the valley, which roughly divides the upper section of the valley from the middle and lower agricultural zones of the valley, is characterized by irregular topography formed by Quaternary lava flows. The site occupies a shallow draw in this hilly terrain, which is incised by the deep gorge of the Colca River. A canal that carries water from glacial sources high above the valley feeds a reservoir to the south of the settlement. Feeder canals exit this reservoir to irrigate surrounding valley bottom fields and small clusters of terraces on the steep slopes of the river gorge.

The climate of the Colca Valley, located in the western range of the southern Peruvian Andes, is semiarid, with marked wet and dry seasons. Seasonal rainfall occurs between December and March. During the austral winter, the habitat is arid, windy, and cold, with frosts possible any night. Local wild fauna include mammals typical of the high-elevation western slopes of the Andean mountains, including white-tailed deer, taruca deer, pumas, vizcachas, and small rodents. The avifauna consists of tinamous, parrots, and a variety of raptors (e.g.,

hawks, eagles, caracaras, falcons), including the Andean condor. Also present in the region are small colorful birds such as tyrant-flycatchers, giant hummingbirds, buntings, and tanagers. Flamingos, ibises, and spoonbills occur near highland waterways (see Meyer de Schauensee 1970).

### *Inkaic Precursors*

Earlier investigations of local settlement patterns (Doutriaux 2004; Wernke 2003, 2006) revealed that during the Late Horizon (A.D. 1450–1532) Inka imperial occupation was characterized by the construction of central ceremonial precincts at extant settlements from the preceding Late Intermediate period, and by the construction of at least three top tier administrative centers in a locally centralized, but regionally decentralized, settlement pattern. As in other provinces, Inka imperial administration was mediated by local elites and through commensal ritual, as evidenced by the ubiquitous presence of great hall (*kallanka*) structures and associated plazas at former centers of autonomous rule. Such is the case at Malata, where a small, rustically executed *kallanka* and associated plaza are located in a prominent location overlooking the village from its western edge. Excavations in the *kallanka* produced significantly higher proportions of fine imperial serving wares than domestic contexts (Wernke 2013b:121). Imperial serving wares were likely used for hosting state-sponsored commensal rituals (Coben 2006; Gasparini and Margolies 1980; Moore 1996; Wernke 2006).

### *Text-Based Evidence of the Early Franciscan Presence among the Collaguas*

Following the Spanish invasion, the Collaguas were among the early general distributions (*repartimientos generales*) of *encomiendas* (grants to labor and tribute of the indigenous population) by Francisco Pizarro himself. He granted Yanquecollaguas to his younger paternal half-brother Gonzalo Pizarro on January 10, 1540 (Málaga 1977:96). The Franciscan order, likely at the invitation of Gonzalo Pizarro, established one of the earliest locales of evangelization at high elevation in the Peruvian Colca Valley shortly thereafter (Tibesar 1953:65). Coeval ecclesiastical documentation from this period is lacking in known archival holdings; however, Franciscan memorials of their mis-



sion among the Collaguas written in about 1585 place the first Franciscans in the province 40 years previously (ca. 1545). According to these memorials, the first small group of friars to enter the Collaguas Province was headed by Fray Juan de Monzón and accompanied by Fray Juan de Chávez (Tibesar 1953:65).

Franciscan ministrations in the Collaguas Province expanded and formalized in the 1560s, as the friar Pedro de los Ríos was assigned to the valley with four additional friars in 1560 (Tibesar 1953:65–67). New doctrinas were established, old ones were expanded, and convents were built in Yanque in the central part of the valley, and in Callalli in the upper part of the valley (Cook 2002, 2007). The friars are also documented as having begun congregating households to their doctrinas (Echeverría y Morales 1952 [1804]). Given its small size relative to other Inka-era settlements and their succeeding doctrinas, it is highly unlikely that a friar actually resided at Malata. Instead, it would have been periodically visited by one or two Franciscans for liturgical service, catechetical instruction, and sacramentation (Wernke 2011:83–87). The friars apparently evangelized in an itinerant fashion until after the establishment of the convents in the 1560s, after which time the visiting friars to Malata most likely resided in the convent of Callalli in the upper part of the Colca Valley (Cook 2002; Tibesar 1953:65–67).

#### *Archaeological Indices of the Early Spanish Presence*

Archaeologically, small chapels at settlements with Inka installations are the earliest indices of the Spanish presence in the Colca Valley (see Wernke 2007a). During early evangelical encounters, the friars took advantage of local Inka administrative arrangements, situating their chapels near the Inka ceremonial precincts discussed above (Wernke 2007a, 2007b). At Malata, a small chapel was situated near the kallanka and plaza on the higher, western end of the village, affording visual prominence relative to the main residential area downslope to the east. The chapel was at first constructed alone on the natural hill slope with four steps leading into its entry. Excavations of the entry revealed that the atrium surrounding the chapel was built during a subsequent episode, which buried the bottom two steps under leveling fill for the atrium.

The retaining wall for this atrium fill also forms one of the walls for an adjacent plaza. This plaza is accessed through a single entry opposite the chapel entry. A circular platform for a central cross in this plaza aligns with the plaza entry, the chapel entry, and the doorway of a large structure centered on the south side of the plaza. Thus, a more formal, if rustically executed, atrium and central plaza typical of Spanish colonial urban plans was elaborated during a discrete remodeling episode after the initial construction of the chapel (Wernke 2011). GIS-based spatial network analysis determined that movement through the doctrina was also reorganized during the brief period of Malata as a Spanish doctrina between the 1540s and 1570s, as traffic was directed toward the chapel and associated plaza and away from the kallanka and its plaza (Wernke 2012). The remodeling and reorientation of the site, as well as the evidence for the congregation of households to Malata during its doctrina-era occupation, are consistent with the historically documented scenario of expansion and formalization of Franciscan evangelization efforts in the 1560s.

In the mid-1570s, this mendicant-led doctrina system was superseded by the forced resettlement program. These doctrinas were either converted to reducción towns or abandoned in the forced resettlement program known as the *Reducción General de Indios* (General Resettlement of Indians) of the viceroy Francisco de Toledo. Under the authority of the *visitador* Lope de Suazo, the local populace was relocated to one of the reducción villages of the valley (Málaga 1974). Some doctrinas became reducciones, while others, such as Malata and all non-doctrina settlements in the agricultural zone of the valley, were forcibly abandoned as their populations were relocated to reducción towns. The nearest and most likely reducción to which the people of Malata resettled is Santa Cruz de Tuti, located 6 aerial km to the north. That reducción, today known as Mawchu Llacta, lies in ruins above the modern village of Tuti and is the subject of ongoing research by the second author.

Malata thus provides a chronologically controlled case for investigating daily and ritual life during the transition from Inka to Spanish rule, through the first 30 years of Spanish colonial administration and religious indoctrination.

## Materials and Methods

Following mapping, survey, and test pit excavations in 2006, a two-season extensive excavation project began in 2007. The primary intent of the project was to understand the two-way process of how the everyday practices of the Spanish colonial *doctrina* affected and were affected by existing Inka administrative strategies and domestic practices. Excavations focused on three contexts of interest: the chapel, primarily to understand change and continuity in the burial practices and demographic makeup of the population; the Inka and Spanish public and ceremonial spaces, including the *kallanka*, plazas, and Spanish administrative structures; and domestic patio groups.

Zooarchaeological analysis of faunal remains recovered from these contexts provides pertinent information regarding change and continuity between Andean and Spanish lifeways during early colonial interactions. Faunal remains recovered from the chapel and central Inka and Spanish public spaces are used to determine the extent to which native animals continued to play a role in public, ceremonial practices, or were instead replaced by Old World domesticates. Similarly, analysis of the contents of domestic structures can examine how status-based variations in consumptive patterns were affected as Old World species were introduced into the local economy. The faunal remains are also used to determine whether economic reorganization related to animal resources or products occurred in conjunction with Spanish colonization. The zooarchaeological analysis indicates that animal use was very conservative, with no indication of the introduction of Eurasian animals to the region, despite the establishment of the *doctrina*. Products from camelid husbandry and local systems of production continued through time. The faunal assemblage, which is dominated by camelid remains, and the quantity of textile paraphernalia are interpreted as supporting evidence for the Spanish-implemented intensification of textile production to provide cloth as a form of taxation.

Faunal remains reported here are from 10 excavated contexts, with a total of 300 m<sup>2</sup> exposed, including public administrative buildings and space, domestic structures and associated kitchen/work areas, one tomb context, the likely

quarters of the friar, and the Spanish colonial chapel and its approach (Figure 2). The quantity of animal remains varied significantly among the structures.

The excellent architectural preservation at Malata allowed researchers to address specific questions about different building functions, activity areas, and domestic practices. Among domestic contexts, excavations were conducted in a domestic compound hypothesized to have functioned as the quarters of the visiting friar based on its size, location, and features. The friary (Structure 4) is the main building in this compound and is the largest domestic structure of the village. It is located to the immediate northwest of the chapel, segregated from the main residential area of the site. The structure has several diagnostic colonial architectural details, including an arched wall niche and an internal room at the south end. It is the only rectilinear domestic structure documented with an interior room division at Malata.

Structure 8 is a *chullpa* (burial tower). A pre-hispanic cemetery of subterranean collared tombs is dispersed over the steep colluvial slope to the north of the main residential area. Structure 8 is one of a pair of circular *chullpas* situated on a terrace adjacent to the chapel at the western end of this cemetery. It was highly disturbed from looting and contained only a small quantity of faunal remains.

The colonial chapel (Structure 10) is located in the higher, western end of the site, overlooking the main residential sector. Excavations included nearly all of the interior and the entranceway. Findings suggest that earlier architectural features were not present in this area. The plaza entry opposite the chapel, and the doorway of a large building (Structure 15), are centered on its southern side. Given this configuration, Structure 15 was hypothesized to have a public, administrative, or ceremonial function akin to a simple *cabildo* building (town hall). Consistent with the function of Structure 15 as a public, administrative, or ceremonial building, excavations encompassing nearly its entire interior area revealed an extremely clean and homogeneous packed-earth floor with very low faunal remains and artifact densities, although collections included a small piece of silver filigree.

An Inka ceremonial complex, composed of a small, rustically executed *kallanka* (Structure 20)

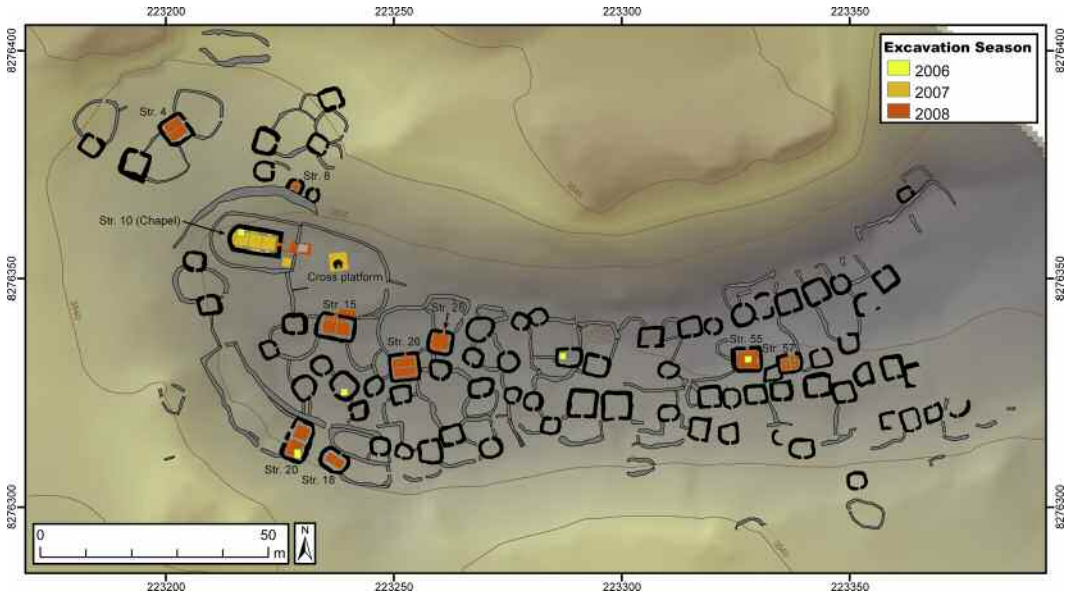


Figure 2. Site plan and excavated contexts.

and its long fronting plaza, is located to the south of the plaza/atrium, which constitutes the public and ritual core of the doctrina occupation of the site. The kallanka continued to be used through the colonial occupation, as evidenced by the recovery of caret head nails (diagnostic of the first half of the sixteenth century) from floor-level contexts (Wernke 2013b:182). In the south end of the building and surrounding a natural rock outcrop is extensive evidence of burning events that took place through the use life of the structure.

Behind the kallanka is a medium-sized building (Structure 21) of rectangular-to-ovoid form, which was excavated to investigate its possible relationship with the kallanka. This relationship remains ambiguous, as intermixed Late Horizon and early colonial-era lead-glazed ceramic sherds were recovered from a higher, colonial floor, which was superimposed on an earlier floor of uncertain date. Structure 21 is built on a high terrace that is intrusive in relation to a circular house in front of it that is probably Late Horizon in origin. This terrace wall blocks access to the original doorway of the house below; that doorway was closed off, and a new doorway was built on the opposite side of the house. Therefore, Structure 21 postdates that house, but its precise time frame of construction (prehispanic or colonial) is unclear. The context presumably represents domestic residue and refuse.

Immediately adjacent to the only entrance to the colonial plaza is the second largest domestic structure at the site: the large-sized, well-constructed stone masonry house (Structure 26). It is fronted by the largest domestic patio space of the village. Access to the compound was restricted to a single entrance off the main path into the colonial plaza, such that all traffic going to the plaza would converge in front of it. This compound is an exception to the rule of distribution of quadrangular houses at Malata: it is the only compound of its kind in the old core of the site. It is clearly intrusive and built in conjunction with the doctrina-era plaza itself. This house also stands out for its great height, volume, and for the quality of its masonry. Access to the compound itself was apparently regulated and monitored, as all visitors would have to walk past the doorway of a smaller outbuilding—presumably the cookhouse for the *kuraka* (Structure 28)—to access the patio and entry to the main house. This structure is much smaller and informal and is clearly functionally related to Structure 26. Given these attributes, this compound is hypothesized to have been the household complex of the principal *kuraka* (headman) of the doctrina.

Excavations in the kitchen/service building (Structure 28) in the patio of Structure 26 produced very high densities of domestic refuse. Evidence for public and private cooking and serving included

abundant cooking vessel fragments and the finest polychrome Inka serving vessel recovered from the site. Abundant ash, faunal remains, botanical remains, and weaving implements indicate a range of productive activities in Structure 28. The kuraka house (Structure 26) was much cleaner, with low densities of materials. Both structures, however, revealed circular slabstone features on their floors. In the kuraka house, this table-like feature is located against the back wall, directly opposite the narrow doorway. In the outbuilding (Structure 28), it was located in the southwest corner. Both were apparently used at least in part for weaving activities, as discussed in the following section.

The eastern end of the residential area of the village constitutes a distinct neighborhood. Rectilinear buildings there are arranged in linear fashion facing one another, as opposed to the agglutinated compound arrangement of mostly circular floorplan houses in the central part of the site. Most domestic compounds in this eastern neighborhood are composed of a single large rectangular structure—some with diagnostic colonial attributes—and sometimes with a smaller associated outbuilding. This neighborhood was almost certainly added on during the doctrina-era occupation, as friars congregated households from surrounding settlements.

A medium-sized house (Structure 55) and a workshop (Structure 57) were part of a single domestic compound and were excavated to investigate the organization and contents of these new kinds of household spaces. The main house (Structure 55) is a more formal residential structure analogous to the large kuraka house (Structure 26) in size and quality of the construction. The workshop (Structure 57) is an eccentric structure with many cubby-like niches in its interior and a shed roof, a feature unique in the settlement and undocumented in prehispanic contexts in the valley. The workshop (Structure 57) had dense sheet middens with abundant materials of all categories, including mineral pigments that may relate to textile or ceramic production. A circular, slabstone table-like feature was also present in each of these buildings. In the medium-sized house (Structure 55), an ingot cast, from which traces of copper were detected through PXRF analysis, indicates that its inhabitants smelted copper during the Colonial era.

### *Zooarchaeological Methods*

The faunal analysis included material from both the 2007 and 2008 excavations. All matrices were field-sieved with both 1/4" (6.35 mm) and 1/16" (1.8 mm) dry-screen meshes to recover small-sized remains. The majority of the faunal remains were recovered from within structures and are in an excellent state of preservation. Analysis of the faunal material was completed by the first author at the Museo Contisuyo in Moquegua, using the vertebrate fauna comparative collection of the museum. All faunal remains were identified to the most specific taxonomic level possible. Information regarding butchering, burning, and other modifications was recorded, as well as estimated age at death (fusion). Dimensional measurements of complete elements were taken to aid in distinguishing llamas from alpacas.

The stratigraphy in all cases except for the chapel was very shallow. In cases without wall fall, floor surfaces were less than a few centimeters below present surface, often in the center of the buildings and slightly more along edges and corners. In all but one case (Structure 21, the date of construction of which is ambiguous), the domestic structures excavated were built during the colonial occupation of Malata. Structure 15, the large non-domestic building on the plaza, is clearly of colonial origin as well. The stratigraphy in the kallanka was also shallow, with Inka and doctrina-era materials intermixed. Therefore, due to the shallow nature of the deposits, faunal material was analytically combined by structure.

### **Results**

The 10 contexts excavated at Malata produced a total of 1,415 vertebrate specimens representing a minimum of 42 individuals (Tables 1 and 2, Supplemental Table 1). For all 10 contexts, the taxonomic variety is low. The assemblage contains remains of six mammals and at least one bird. No other vertebrate classes are represented. Mammals include both large (probable llamas) and small-sized camelids (probable alpacas). White-tailed deer are present in three contexts; in the workshop (Structure 57), the deer remains consist exclusively of an antler tool flaker that may represent a tool rather than food refuse. Guinea pigs are present in three contexts, and small unidentified rodents and



Table 1. Taxa Present by Contexts.

Taxonomic Name	Common Name	Friary (Str. 4)	Chullpa (Str. 8)	Atrium (Str. 10)	Chapel (Str. 10)	Kallanka (Str. 20)	House Behind Kallanka (Str. 21)	Big Kuraka House (Str. 26)	Kuraka Kitchen (Str. 28)	Medium House (Str. 55)	Workshop (Str. 57)
<i>Cavia porcellus</i>	guinea pig				x					x	
Rodentia	rats, mice, guinea pigs	x									
cf. Carnivora	canids, felids, mustelids								x		
<i>Lama glama</i>	llama	x						x			
<i>Lama sp.</i>	llama, guanaco	x	x			x		x		x	
Camelidae	llama, alpaca	x				x		x		x	
Camelidae/Cervidae	llama, alpaca, deer, guanaco			x		x		x			x
<i>Odocoileus virginianus</i>	white-tailed deer, guanaco	x							x		x
cf. Cervidae or <i>Odocoileus</i>	deer										
Large Mammal unidentified	large mammal	x	x			x		x		x	x
Mammal unidentified	mammal	x		x		x				x	
Aves unidentified	birds										

a possible carnivore occur in single contexts. Two avian specimens from a small-medium sized bird (e.g., tinamous) were recovered. All of the identified vertebrates are indigenous to Peru. No remains of Eurasian animals have been positively identified thus far in any contexts at Malata.

Camelid remains dominate all of the assemblages (Supplemental Table 1). Dimensional measurements of the first phalanx indicate that most of the measurable first phalanges fall in the size-range of modern alpacas ( $n = 7$ ) versus llamas ( $n = 3$ ) (Figure 3). Many other elements compared favorably with a modern llama in terms of size and are identified as *Lama* sp., although some of these remains could be from alpacas (*Vicugna pacos*). All age classes of camelids are present at the site ranging from newborns to aged adults (Figure 4). The presence of many specimens (42 percent) from adult or older adult animals suggests that camelids were reared for renewable products, such as fiber or dung, or for utilitarian purposes, such as for use as pack animals.

In general, species diversity was uniformly low for all contexts. Greater quantities of faunal remains were recovered from structures that spanned both Prehispanic and Hispanic periods, as opposed to buildings constructed and occupied only during the brief Spanish occupation. The kuraka kitchen/service house (Structure 28), the medium house in the eastern neighborhood (Structure 55), and its associated workshop (Structure 57) had significantly more faunal material than the other structures in terms of NISP and weight (see Table 2, Supplemental Table 1). In all contexts, camelids and large unidentified mammals represented the majority of material recovered. Additionally, the majority of modified bone (worked, polished, or cut) (Supplemental Table 2) was either camelid or large mammal. Non-camelid remains include guinea pig and a single worked antler fragment of white-tailed deer.

The kallanka (Structure 20) and the structure behind it (Structure 21), which are believed to have functioned as a meeting location during the Inka occupation and later during the brief Spanish settlement, had relatively few faunal remains (NISP = 31 and 20, respectively). The majority of these were camelids and large mammals, although remains from one guinea pig were found in the kallanka. The kallanka had some evidence of

Table 2. Quantity and Percent of NISP, MNI, and Bone Weight by Context.

Structure	Area Excavated		NISP	%	MNI	%	Weight (g)	%
	(m <sup>2</sup> )							
Friary (Str. 4)	18.9		200	14.2	8	19	639.1	12
Chullpa House (Str. 8)	4.9		29	2.1	3	7.1	138.8	2.6
Atrium (Str. 10)	28		28	2	2	4.8	164.4	3.1
Chapel (Str. 10)	37.1		12	.9	1	2.4	82.6	1.6
Kallanka (Str. 20)	23.3		31	2.2	2	4.8	65.1	1.2
House Behind Kallanka (Str. 21)	7.9		20	1.4	2	4.8	163.4	3.1
Big Kuraka House (Str. 26)	26.2		48	3.4	4	9.5	321	6
Kuraka Kitchen (Str. 28)	14.5		503	35.7	8	19	1090	20.5
Medium House (Str. 55)	21.5		297	21.1	8	19	1806.9	34
Workshop (Str. 57)	17.2		247	17.5	4	9.5	846.9	15.9
Total	199.5		1415	100	42	100	5318.2	100

burned mammal remains in a layer of ash. Like the kallanka and the house behind it (Structure 21), the chullpa (Structure 8), had few remains that consisted solely of camelids and large mammals. Nearly half of these showed signs of blackening from burning (Supplemental Table 3).

The large kuraka house (Structure 26) had few remains (NISP = 48), nearly all of which were camelids and large mammals. Its kitchen (Structure 28) had the largest amount of faunal material (NISP = 503) in comparison to the other excavated structures. Although the majority of these remains (98.6 percent) came from camelids and large mammals, two bird wing bones (coracoid and scapula) were found, presumably from the same individual, as well as an ulna fragment from an unidentified car-

nivore and white-tailed deer remains. Almost half (49.3 percent) of these bones were burned, primarily the large mammal and camelid remains, but, in one case, deer as well (see Supplemental Table 3). The kitchen did not have significantly more hacked or cut remains than the kuraka house. Both structures contained several examples of worked and polished bone, with at least one *wichuña* (loom pick) from each structure. At the base of the circular table-like feature in the kitchen of the kuraka house (Structure 26) was a cluster of five worked *Lama* sp. elements including two patellae with striations and polish from being used as some type of tool, a worked humerus shaft, a worked and polished anterior fragment of an ilium, and a very worn *wichuña* tip made from a *Lama*

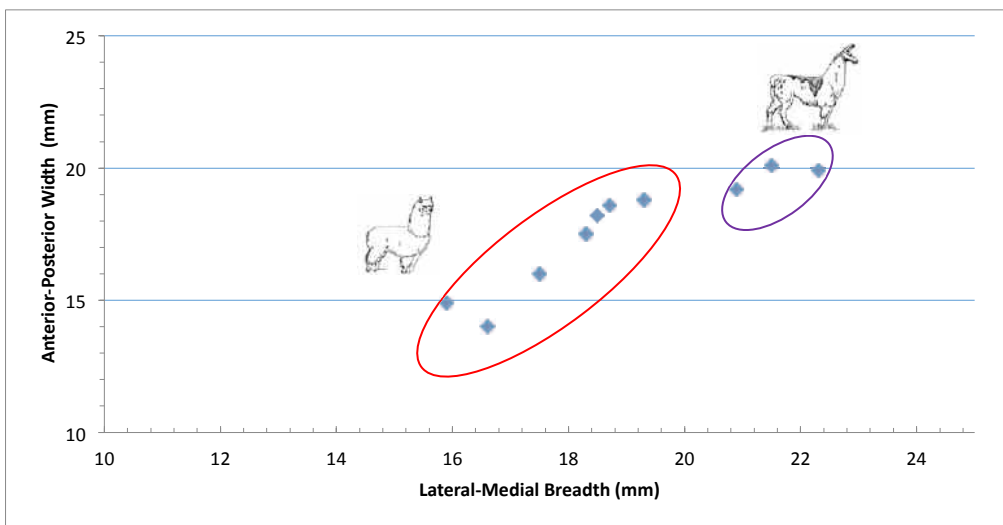


Figure 3. Bi-variate plot of camelid first phalanx measurements to distinguish llamas from alpacas.

### Camelid Mortality Profile (Total Site)

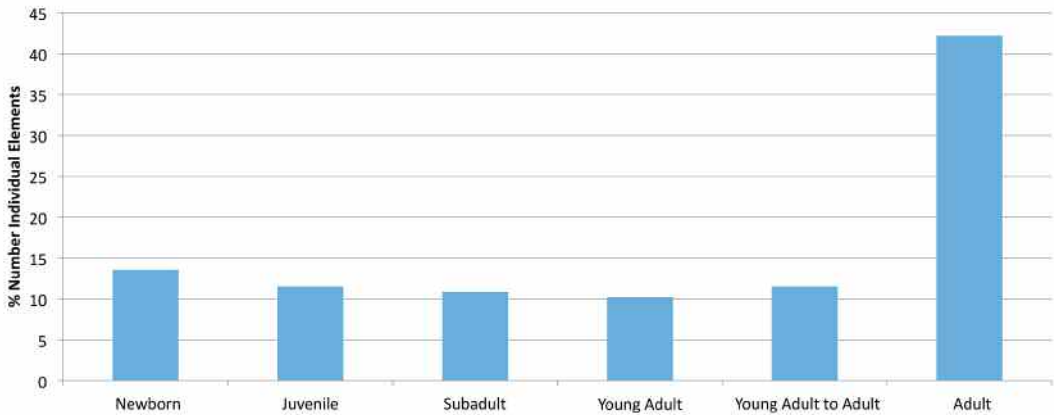


Figure 4. Estimated ages of camelid specimens.

sp. metapodial (see Supplemental Table 2). Also present was the anterior quarter of a llama mandible.

The medium-sized house (Structure 55) and its workshop (Structure 57) were part of a single patio group. Although both had considerably more faunal remains than most of the other structures at the site, their assemblages consisted mainly of camelids and large mammals (94.6 percent and 95.1 percent of total NISP, respectively). Both structures contained the remains of at least one guinea pig and, in the case of the workshop, a white-tailed deer. The workshop had a higher proportion of burned bones than did the house (35.6 percent as opposed to 13.5 percent). The medium-sized house had comparable proportions of worked or polished bones and wichuñas with the workshop, including two wichuñas and the worked antler tine (see Supplemental Table 2). Structure 55 also contained the only pathological camelid specimens found at the site. The paired first, second, and third hindfoot phalanges from a single *Lama* sp. individual contained evidence of osteophytes and pathological bony growth, particularly on the lateral bone surfaces of one of the first phalanges and one second phalanx (Supplemental Table 4). The context also contains a complete right metatarsal with periostitis on the anterior and medial surfaces of the proximal quarter of the element.

The Spanish missionary architecture, including the friary, atrium, and chapel (Structure 10), produced almost exclusively large mammal and camelid remains, the latter mostly comprised of *Lama* sp. Considerably more remains were recovered from the friary than the atrium and chapel (see Supplemental Table 1). In the case of the former, camelids (including one domestic llama, *Lama glama*) and large mammals comprised 93.5 percent of the recovered faunal material. White-tailed deer and rodents each comprised 1 percent of the total. Only camelid and unidentified mammal remains (mostly from large-boned, presumably camelids as well) were recovered from the chapel and atrium. Remains recovered from the latter came exclusively from the stairs and entrance to the chapel. Only the friary had evidence of burned remains, most originating from a layer of ash (see Supplemental Table 3).

### Discussion and Conclusion

The findings from Malata are significant for providing the first view of daily life in an early doctrina in the central Andean highlands. Its brief colonial occupation, truncated by abandonment during the Reducción General de Indios, provides a chronologically controlled window into domestic practices through Inkaic times and during the first generation after the Spanish invasion of the Andes.

The emerging picture is one of both transformation and persistence. On the one hand, it is apparent that the friars sought to spatially reorient the village. Considerable evangelical resources were brought to indoctrinate, through the construction of a chapel, and to inculcate a Christian lifestyle through manipulation of the built environment. The chapel was enclosed by an atrium and fronted by a plaza with central cross and administrative building. A new neighborhood and new kinds of domestic compounds were constructed for newly congregated families around an older, Inka-era residential core. Considering the early and relatively remote context of this small village, these are extensive and significant changes demonstrating considerable mobilizations of labor.

On the other hand, the analysis of archaeofaunal data presented here clearly point to persistence of indigenous domestic practices within the intimate interior spaces of domestic structures, away from the prying eyes of the friar. Household productive activities continued to be centered on camelid pastoralism and weaving. The reasons for this persistence are likely multiple. First, Malata was almost certainly a secondary doctrina in a network of doctrinas established by a small group of friars at former centers of Inka administration throughout the Colca Valley. It would have been visited only occasionally by a friar for doctrinal instruction and sacramentation. Second, during this earliest period of Spanish colonization, Eurasian domesticates were still maladapted to the high elevation environment, especially by contrast with the ongoing operation of the highly productive agro-pastoral systems in place since before the Inka era.

More broadly, Malata provides an initial sounding into the long process of adapting—in a sense, redomesticating—Eurasian domesticates to the very different environmental conditions of the high Andes. Very little is known about how, by whom, and over what time scales this occurred. Far from neo-European environmental regimes (*sensu* Crosby 1986) of more temperate areas of the Americas, the high-elevation conditions of the central Andes posed significant challenges to plants and animals adapted to the conditions and practices of the Old World. Malata is far from unique in this regard; its remoteness, relative to primary centers of evangelization and administration, and environmental setting are common to a

large swath of the peasant population of the central Andean highlands. In these areas, persistence of many aspects of domestic economic organization may be expected, relative to those regions more amenable to initial colonization by Eurasian domesticates and nearer to Spanish centers, particularly those at lower elevations such as is found at Spanish colonial wineries (see deFrance 1993, 1996) and at the sierra elevation *reducción* of Torata Alta in southern Peru and the coastal *reducción* of Carrizales in the lower Zaña Valley (see deFrance 1993; Kennedy and Van Valkenburgh 2016). The low sierra colonial winery sites show the greatest range of Eurasian animals, including abundant remains of cow, pig, caprines (sheep or goats), and chickens. The faunal assemblages at both of these lower-elevation *reducciones* (Torata Alta and Carrizales) show the adoption of a much more limited range of Old World animals of which pig and chicken are most common.

A distinctive pattern of animal use occurs at the extreme high-elevation settings near the mining center of Potosí (4,050 m asl) in the former Upper Peru (modern Bolivia). The Potosí area is a unique case, since the massive silver mining operations there created huge demands for goods of all kinds. Sites associated with Spanish colonial residents there exhibited an ability to acquire meat from Eurasian animals (see deFrance 2003), indicating the economic ability to overcome geographic constraints. Particularly abundant were remains of caprine and chickens. It is not known whether these animals were reared in high-elevation settings or at lower elevations and acquired in markets or through other means. Remains of local camelids were also found at Spanish colonial sites, although meat from native Andean animals may have been consumed by indigenous individuals (e.g., servants, laborers) who also inhabited these sites. Seventeenth-century Colonial-era settlements outside of Potosí near the modern town of Porco inhabited almost exclusively by indigenous residents exhibit the maintenance of traditional Andean domestic patterns with minor evidence for introduced fauna. Over 90 percent of the NISP of the faunal assemblage there is from local animals. Remains of Eurasian animals include cow, caprines, equid (horse or burro), and chickens (see deFrance 2012:15). Potosí and its environs were the economic hub of Spanish colonization in the Central



Table 3. Weaving Implements Made from Camelid and Large Mammal Bone.

Context	Taxon	Element	Side	Object
Kuraka kitchen, Str. 28	<i>Lama</i> sp.	tibia	L	carding tool, polished with small teeth on proximal end, broken-point on distal end
Kuraka kitchen, Str. 28	<i>Lama</i> sp.	tibia	uns	wichuña pointed end intact
Large House, Floor around "mesa/table" with bone and artifacts, (ca. 1586), Str. 26	<i>Lama</i> sp.	metapodial	uns	wichuña, point distal end, broken with groove distal end
Medium house, Str. 55	<i>Lama</i> sp.	metatarsal	L	wichuña
Medium house, Str. 55	<i>Lama</i> sp.	metatarsal	L	wichuña
Medium house, Clay-ash in NE corner, Str. 55	<i>Lama</i> sp.	metatarsal	L	wichuña
Workshop floor, Str. 57	<i>Lama</i> sp.	metatarsal	R	wichuña
Workshop Pit feature along east wall, Str. 57	<i>Lama</i> sp.	metatarsal	L	wichuña
Workshop floor, Str. 57	Lg. Mammal uid	shaft	uns	broken wichuña point

Andes, and the mining center exerted much control over exchange networks. Emulating Spanish practices presumably brought greater economic gains for indigenous peoples.

In contrast to other regions of Spanish colonization in the Central Andes, the range of animals used at Malata is very conservative. There exists no evidence to suggest that either the indigenous inhabitants or the visiting friars consumed meat from introduced animals, or that non-native animals were employed for industrial uses. Additionally, there are no significant differences in the portions of camelid meat that were consumed among the different structures (Supplemental Table 5). The Friary context (Structure 4), presumably inhabited by the Franciscans, contained several non-meaty head and foot portions with no evidence for higher status or select meat cuts. Despite the conservatism in animal use, aspects of the artifact assemblage suggest that Spanish colonization of Malata altered aspects of domestic production in regard to animal resources, and possibly animal husbandry.

The abundance and distribution of weaving tools across the site suggest that the production of textiles or cloth may have been mandated as a tribute item during Inka times and continued as a colonial form of taxation. This interpretation is based on the occurrence of loom picks (wichuñas) ( $n = 8$ ) and a probable carding tool (Table 3). Weaving implements occur in four of the structures, including the kuraka kitchen, the workshop,

and both the medium and large houses (Figures 5, 6, and 7). The majority of these are made from the straight and strong lower leg bones of camelids (e.g., the metatarsal, metapodial, or tibia). This form of the loom pick has endured through time, and modern examples are identical to those from the past (see Figure 6 inset). This high-elevation setting is highly conducive to camelid rearing. Camelid fiber transformed into cloth would have been both a local necessity due to the cold climate and a highly valued commodity. Although the assemblage does not show a significant increase in weaving artifacts during the colonial era, the quantity of weaving implements is greater than reported for other Late Horizon (Inka) sites and early colonial contexts (e.g., Van Buren 1993). In addition to weaving, the presence of abundant mineral pigments in Structure 57 suggests that ceramic production was possibly one of the activities carried out in the workshop.

Besides fiber and cloth, camelids may have played a significant economic role as a source of dung for fuel, an interpretation supported by ceramic iconography. In high-elevation settings the scarcity of fuelwood makes camelid dung a highly valued resource. In the precolonial past, during the Spanish colonial period, and in the present, dried camelid dung was used for ceramic production as well as for smelting and refining silver in the mining region southwest of Potosí, Bolivia (see Sillar 2000; Van Buren and Cohen 2010; Winterhalder et al. 1974). The copper ingot crucible

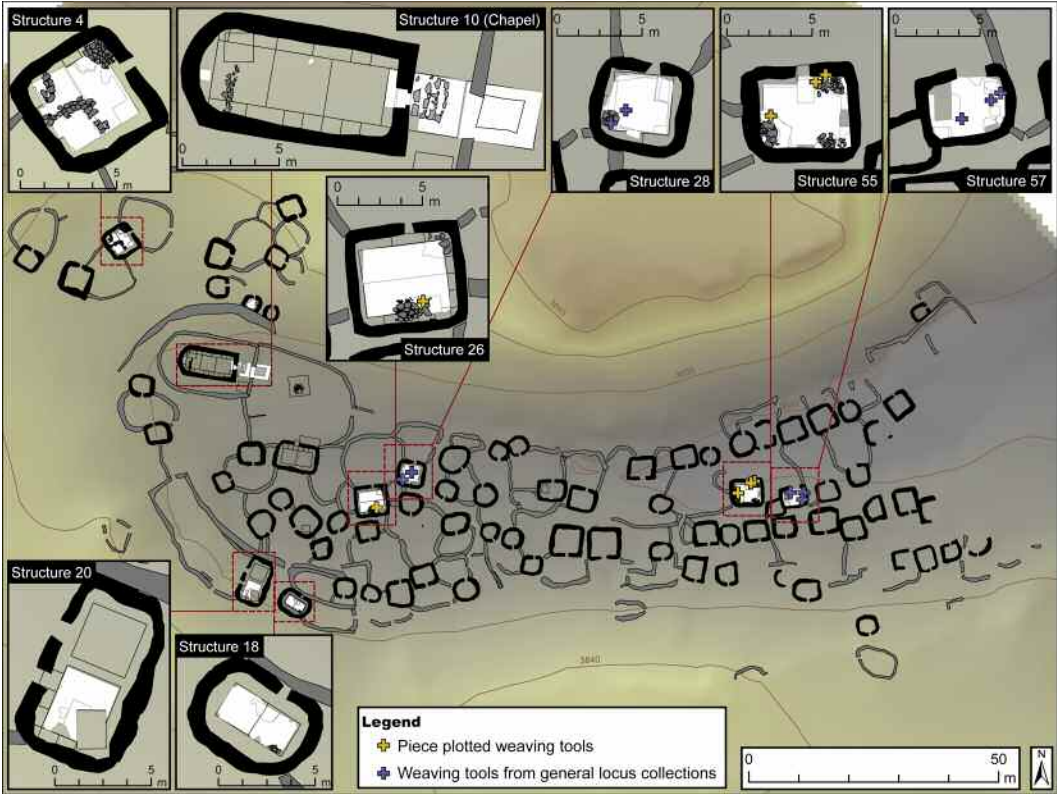


Figure 5. Distribution of weaving implements across the site.



Figure 6. In situ wichiña (loom pick) made from camelid metatarsal in Structure 55 and modern example with loom.



Figure 7. Possible carding tool made from camelid tibia.

from next to the table feature in Structure 55 and the aforementioned mineral pigments indicate that the residents of the site produced ceramic vessels or metallurgical objects. Both of these would have required controlled firing conditions at high temperatures. Dried camelid dung would have been an ideal form of fuel for either of these. And because domesticated camelids defecate in communal piles, their dung is relatively easy to harvest and store for future use.

Support for the interpretation that dung was an important fuel source comes from five different

ceramic vessels recovered in the kallanka that each display painted images depicting defecating camelids (Figure 8). One of the vessels is a plate with an outer band of five defecating camelids and an inner band of five flamingos. A second plate contains a sole defecating camelid in the center of the vessel surrounded by a band of birds. The motif is also present on the rim fragments from two other vessels and on a body sherd of a fifth vessel. Defecating camelids are not an iconographic motif previously identified on either Inka or colonial ceramics. The selection of this behavior

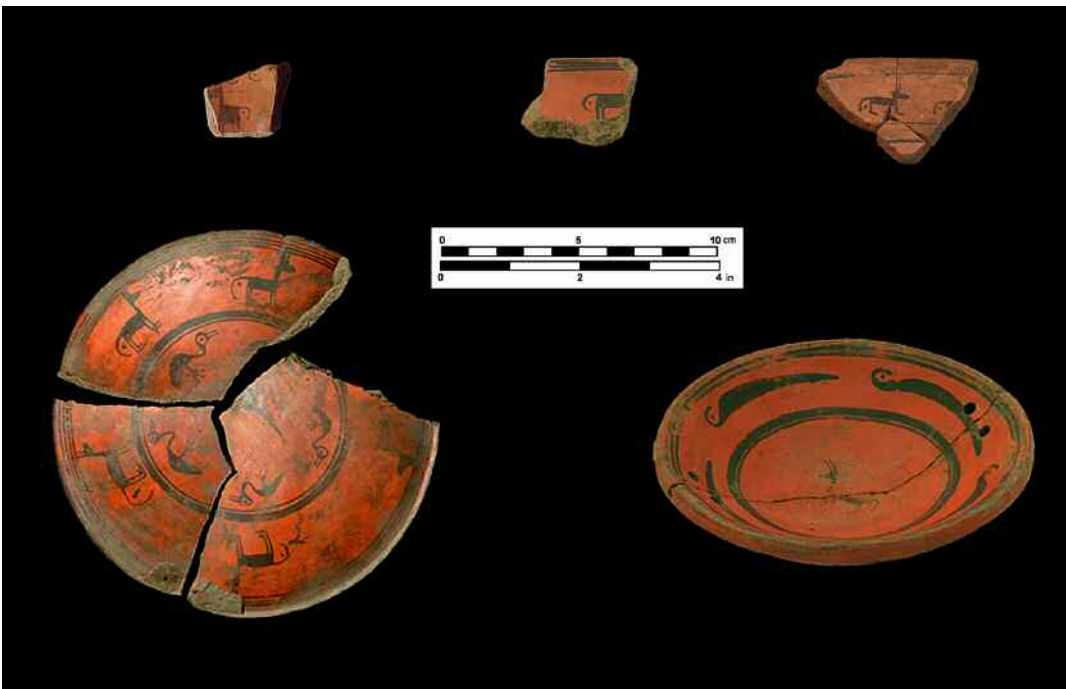


Figure 8. Ceramic vessels depicting defecating camelids.



as a design element very strongly suggests that this activity was important for local economic ends. If metallurgy and ceramic production were common during the Inka period, the products from these activities may also have become sources of colonial taxation. Future excavations at the reducción of Santa Cruz de Tuti (Mawchu Llacta) will help elucidate the possible range of colonial tribute that was exacted from the local community. The faunal remains, weaving artifacts, and unique ceramic motifs all found at Malata indicate that camelid pastoralism and their products continued to be important for domestic and political economic activities.

High in the Colca Valley, the Inka and early Spanish colonial site of Malata provides a window on lifeways of an indigenous population at a critical point in Andean history. Although Malata was never a significant node in either Inkaic or Spanish administrative enterprises, archaeological investigations and analysis of faunal remains indicate that the economic and food habits of the inhabitants were focused on highland camelid herding, weaving, and possibly either ceramic production or metallurgy. The establishment of the doctrina and mandates by Franciscan friars significantly altered the physical landscape of the site; yet daily practice, particularly the types of animals used, appears not to have changed significantly. In comparison to other early colonial centers, Malata exhibits the most conservative pattern of animal use.

Despite the fact that local indigenous animals continued to be used for food and other purposes, with no evidence for the establishment of Eurasian animals at the site or in the region, nor any indication that the friars demanded or were provided with higher quality portions of the local animals, the artifact assemblages related to both weaving and other activities suggest that the colonial era ushered in changes in economic organization. The inhabitants may have been required to provide camelid fiber and cloth as tribute. They may also have used dried camelid dung for the production of goods that required heating at high temperatures. Despite the upheaval of the Spanish conquest and the social turmoil that ensued, the habitual aspect of domestic practice and the geographic constraints of the high-Andean environment likely worked in tandem to enable the persistence of the most intimate aspects of daily life in this and many other places like it in

early colonial times, even if the scale of production was altered. The short-term occupation of Malata thus provides a first sounding into daily life that is rarely available in archaeological settings. This study adds to our understanding of indigenous response to Spanish colonization.

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*Supplemental Materials.* Supplemental materials are linked to the online version of this paper, which is accessible via the SAA member login. These include the following tables:

Supplemental Table 1. Taxa Identified, NISP, MNI, and Specimen Weight by Context.

Supplemental Table 2. Bone Modifications by Context.

Supplemental Table 3. Frequency of Burning by Structure.

Supplemental Table 4. Bone Pathologies, Lama sp., Structure 55.

Supplemental Table 5. Frequency and Percent of Camelid Body Portions by Context.

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