The Materiality of Islamisation as Observed in Archaeological Remains in the Mozambique Channel

Submitted by Nathan Joel Anderson, to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Arab and Islamic Studies, 9 April 2021.

I certify that all material in this thesis which is not my own work has been identified and that any material that has previously been submitted and approved for the award of a degree by this or any other University has been acknowledged.

(Signature) ………………………………….

Abstract

This thesis examines the chronologies and mechanisms of Islamisation, western Indian Ocean entanglements, and socio-cultural identity of Islamic settlements in the Mozambique Channel in the centuries preceding the colonial period. A brief introduction to core concepts such as Islamisation, Islamic frontiers, and the Swahili coast, in addition to an overview of the relevant Mozambique Channel archaeological locales is provided in order to contextualise the research. Archaeological remains from coastal Islamic sites in northwestern Madagascar and northern Mozambique, form the principal datasets for this study. Tangible markers of past Islamic practice, detectable as mosques, Muslim tombs, Arabic epigraphy, and specific portable material culture, are identified at the case sites. The artefactual data is arranged according to chronological sequences, informed by typological and absolute dating techniques, in order to better understand and compare relative lifeways across the Mozambique Channel through time.

Multiple possible Islamisation mechanisms are identified for the primary case study, Kingany, Madagascar, based on the archaeological assemblage recovered from the site. These include population movements of Islamic Africans and individual conversions instigated in part by *longue durée* engagement with Indian Ocean mercantile networks. Findings are then extrapolated to the region at large. Archaeologically attestable manifestations for socially embedded Islam in the Mozambique Channel appear earliest in the Comorian Archipelago in the 10th/11th centuries. However, the early coastal cities of Madagascar, the first of which emerged in the north of the island in the 10th century, embraced Islamic practices within a century of their Comorian counterparts. Archaeological evidence for analogous Muslim communities in Mozambique is absent prior to the 13th century, with the exception of the famous entrepôts of Chibuene and Sofala, though the present state of the scholarship limits interpretation. This study found that exposure to Islam in the Mozambique Channel was initially a byproduct of localised interaction with western Indian Ocean cultural spheres, with secondary Islamisation events likely linked to southward trending population dispersion phenomena beginning in the early-second millennium.

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Chapter 1. Introduction

1.A. Introduction

This thesis examines Islamisation, trade, and socio-cultural identity in the Mozambique Channel in the early-second millennium AD (all dates are AD unless otherwise specified). Islamic society in East Africa did not end in southern Tanzania at Kilwa Kisiwani or Mikindani, nor were the syncretic variations of the faith intellectually patented by the diverse, and somewhat paradoxically, far-flung collective of the Swahili. The mechanisms by which Islamised peoples came to inhabit lands thousands of kilometres (km) away from the Arabian Peninsula in the formative centuries of the faith were not all cognate to those of the Maghreb and *Al-Andalus*, where conversion spread at the speed of war horses. The Umayyad Caliphate's maneuverings and unifying triumphs, ironically, set the stage for their successors, and when the Abbasids usurped power, their ambitions precipitated an Indian Ocean golden age, one which even the inhabitants of distant Sofala and *al-Wāq Wāq*, a geographically elusive and distant island of medieval Arab geography, were eager to partake (Tibbetts, *et al.* 2012). Casual exchanges held between traveling believer and infidel merchants in Islam's florescent years belied the complexity beneath the immediate transaction. Habitual interactions between Muslim tradespeople and the western Indian Ocean were a graded affair. While not objectively an administrative frontier under the jurisdiction of caliphal authority, they did manifest themselves in the ever-shifting horizon of the *Dar al-Islam*, a term which denotes the extent of the faithful under direct rule of an Islamic state, and a growing Islamic mercantile periphery. This thesis examines one such zone.

The Mozambique Channel is a narrow branch of the greater Indian Ocean with an approximate area of 1,600 km north/south by 420 km east/west, at its widest. The International Hydrographic Organization demarcates the channel as beginning at the mouth of the Rovuma River, Mozambique, to *Cap d'Ambre*, Madagascar in the north, including all of the Comorian Archipelago, to *Ponto do Ouro,* Mozambique and *Cap Sainte-Marie*, Madagascar, in the south (1953: 22). A consensus of scientific findings asserts a relatively late chronology, mid-to-late first millennium, for permanent human occupation in the Comoros and Madagascar, yet the channel came to house complex settlements which boasted ties to the greater Indian Ocean world within centuries of the first villages (Serneels, *et al.* 2017: 110) (Figure 1.1).

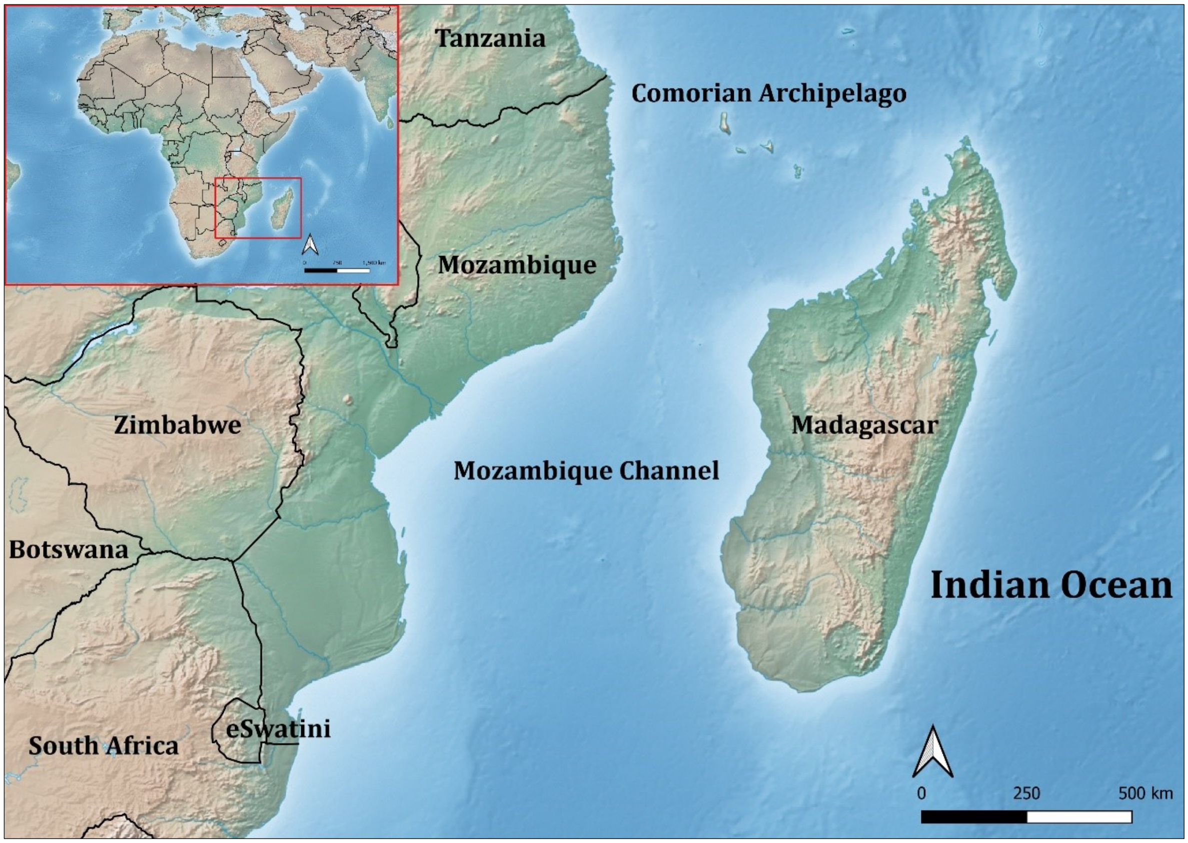


Figure 1.1: The Mozambique Channel.

Abundant raw materials, cattle, copal resin, enslaved peoples, and stone vessels of the highest quality, were shipped from ports concentrated in the northern waters of the channel into the Indian Ocean from at least the early Islamic Period, or the 8th century (Pollard and Kinyera 2017: 928; Vérin 1986; Wright 1992: 85). Nodal markets, exchanging products largely sourced from distant hinterlands, had to be responsive to inland demands, thus promoting community agency within the channel while making for lucrative local-centric trade. Austronesian colonisation and proximity to central south African powers influenced the cultural trajectory of the channel, which was reflected in the unique cultural heritage of corresponding archaeological sites. While actively engaged with the same global systems as their northern neighbours, the Quirimbas Archipelago, and Mozambique as far south as Chibuene (Section 2.C), the Comorian Archipelago (Section 2.D), and northern Madagascar coastline (Section 2.E) appear to have been more than an extension of the Swahili society. Note that the term "Swahili" in this thesis denotes the numerous partially Islamised coastal East African communities from the late-first millennia to the present-day that shared some architectural, burial, ceramic, and broader cultural traditions (Section 1.E.*III*). It is not used here to describe an ethnic group.

This was to end with the 16th century incursions of the Portuguese and subsequent European navies whose attempts to forcibly insert themselves into centuries-old trade lanes, disrupted the flow of goods and people, forever altering the power and mercantile dynamics of the Mozambique Channel (Agius 2019; Freeman-Grenville 1975; Newitt 1973).

1.B. Research Hurdles

A number of logistical hurdles and limitations were navigated by the author during this study. Travel to and from fieldwork locales took upwards of a week. These journeys involved multiple cross-continental flights, bus rides exceeding 15 hours, and numerous day-long voyages accomplished via hired *la'kana*, a traditional Malagasy outrigger sailboat, or *pirogue* dugout canoe. Dense vegetation and poor road conditions made some locales effectively inaccessible. At the destinations, clean water was generally unavailable and electricity, as well as cellular reception, were limited and unreliable. Lodging was frequently bare-bones. In the case of the excavations at Kingany (Section 3.C.*II*) the author camped in a tent for multiple weeks. These obstacles were compounded during the Mozambican leg of the research by the looming threat of violence from the police, military, and extremist groups operating in the region (Section 6.E).

Additionally, the composition of this thesis was affected by the ongoing COVID-19 global pandemic. The author was unable to return to the University of Exeter for over six months in 2020, a period which coincided with the drafting of the analytical and qualitative chapters of this thesis. Thus, during this time, the author could not access artefactual data stored on computers at the Institute of Arab and Islamic Studies and was also forced to rely on texts available online.

1.C. Research Objectives

Using the archaeological record to identify manifestations of Islamisation and corresponding lifeway trends is at the heart of this thesis. Therefore, the research design needed to balance those ever-present analytical priorities of the archaeologist, e.g. chronological inventories, developmental positioning, wealth and social stratification, *et cetera*, with conceptual models of Islamisation for Sub-Saharan Africa. Archaeological sites within the Mozambique Channel, examined by the author via field reconnaissance and strategic excavation, would serve as the case studies, to which other locales within the region would be compared and contrasted. The town of Kingany, Boeni Bay, Madagascar (Sections 1.F and 3.C), was chosen as the central case study. Kingany had received some amount of foundational investigation (Section 1.F), and therefore benefitted from those essential, and often nominal, situating interpretations. Thus, interpretation of the collected material assemblage was facilitated by existing regional typologies, but not trivialised by a surfeit of antecedent operations.

The author was working from a position of limited knowledge, as Mozambique Channel archaeology received only fluctuating and somewhat erratic investigation until *circa* 1990 (Chapter 2), those extant, albeit limited, historical records for Boeni Bay, predominantly recorded by the French archaeologist Pierre Vérin in the 1960s, were critical foundational frameworks for the interpretation of cultural material (1975$_a$; 1975$_b$). While some narrative strands within these chronicles stray into the fantastical, the collections did contain critical contextualising data, especially in regards to past migration events. It was paramount that Kingany and other sites examined for this thesis were evaluated according to the following criteria:

- Is there clear evidence for the presence of Islam?
- If Islam was present archaeologically in the Boeni Bay, does the material record contain data related to the Islamisation of the sites, or were the foundational communities of the region Islamic?
- Do elements of indigenous religions/syncretic practice appear archaeologically in the Islamic period? What might this look like?

Much like the ancient communities of the Mozambique Channel, this research and its findings do not belong to a simple and disconnected metaphorical island. Although the past century of archaeological research has proven that Sub-Saharan Africa was linked by a vast web of trading lanes, which were certainly frequented by more than just merchants, long before the arrival of Europeans, the understanding of these networks has only extended to include the Mozambique Channel relatively recently (Beaujard 2017: 369).

- How did the inhabitants of Boeni Bay fit into these networks? Is the artefact assemblage of Kingany similar, or different, from those of contemporaneous sites in the Mozambique Channel? If so, how?
- What regions of the wider Islamic world were communities in the Boeni Bay in contact with? What are the implications of these connections for reconstructing past regional Islamic influences and beliefs?
- Was the community at Kingany, and coeval settlements of similar composition in the Mozambique Channel, an extension of the Swahili civilisation, as was the case for thousands of kilometres of coastline on the neighbouring mainland?
- If Islamisation occurred at Kingany, was it restricted to “Swahili” subgroups within their population? Are these observations reflective of all of the Mozambique Channel?

The framing questions guiding interpretation in this thesis were developed in such a way that any output would be relatable to Indian Ocean world academia at large.

- What can be learned about Islamisation of the Mozambique Channel at large from the Kingany and Mozambique data?
- Were the mosques in Kingany architecturally and typologically similar to contemporary locales in East Africa, the Mozambique Channel, and the Islamic ports from which any collected trade goods originated? Is there continuity in form and, importantly, orientation?

- What does the material assemblage at Kingany tell us about East African Islam in the early-second millennium? Are these interpretations congruent with the popular theory regarding the western Indian Ocean?

1.D. Research Methodology

To address the research objectives this thesis sought to evaluate surviving historical and traditional accounts of related East African coastal zones, including those embraced by some Anjouani/Comorian and southern Tanzanian communities which emphasise a deep “orthodox” Islamic heritage, and materially assess lifeways present in early-second millennium Boeni Bay, including dietary practice and town planning (Horton 2004; Vérin 1986; Wright, *et al.* 1996: 64). The perspectives reconstructed from a material study can expatiate regional descriptions within the records we do have, adding crucial chronological data and context. Within that same vein, it was prudent that this study approach extant historical records, Arab, Chinese, and European, critically.

1.D.*I.* Historical Accounts and Academic Literature Review

Archaeology offers a set of interpretative tools by which to investigate Islamisation in the past, the outcomes of which become exponentially more nuanced when implemented alongside primary historical sources (Insoll 2017). However, first-hand historical accounts describing the pre-European Mozambique Channel are limited. There exists a handful of translated primary sources by Arab, Chinese, Greek, and Persian authors that discuss coastal East Africa at-large which have proven essential to the scholarship of the region. Note that the term “Malagasy” in this thesis simply refers to permanent inhabitants of the island of Madagascar, not exclusively or intentionally inferring ethnic or cultural connections or continuity between these past groups and the extant population.

One of the earliest known descriptions of coastal East Africa is contained within the 1st century *Periplus Maris Erythraei*, author unknown (Casson 1989: 6). This text details Indian Ocean ports known to the Greco-Roman world, including those dotting the coast of Azania, East Africa, the southernmost of which was the town of Rhapta (Casson 1989: 59, 61; Horton, Boivin, and Crowther 2021: 389). The *Periplus* describes these ports as inhabited by farmers, subjects to the "governor of Mapharitis" (17:6.16), who traded ivory, nautilus shell, rhinoceros horn, and tortoise shell to Arab merchants in exchange for "spears from Muza" and "glass stone" (17:6.17), among other things (Casson 1989: 16, 61). Rhapta persisted in the Greco-Roman consciousness throughout Late Antiquity, as it was further detailed in Claudius Ptolemy's 2nd century *Geographia* and in the 6th century *Ethnica* by Stephanus of Byzantium, but the exact location of the port is debated (Horton and Chami 2017: 138; LaViolette and Wynne-Jones 2017: 2, 6-7).

The historical record of Sub-Saharan eastern Africa is comparatively richer in the Islamic period. The 10th century work *Murūj al-dhahab wa-maʿādin al-jawāhir* by al-Masʿūdī discusses voyages along the East African coast, including a trip to the, now lost, city of Qanbalu (Barbier de Meynard and Pavet de Courteille 1861: 233; Freeman-Grenville 1975: 14). This account denotes Sofala as the southern terminus of merchant traffic from Oman and the Persian Gulf, delineating the frontier of the territorial holdings of the *Zanj*, an Arabic term for black, Bantu speaking Africans (Barbier de Meynard and Pavet de Courteille 1861: 233; Chittick 1968: 104; Freeman-Grenville 1975: 15). Specific commodities exchanged were also logged by al-Masʿūdī, particular items of note being: gold from *al-Wāq Wāq*, the distant uncharted land beyond Sofala, as well as ivory, leopard skins, and tortoise shells from the coastal kingdoms of the *Zanj* (Chittick 1968; Freeman-Grenville 1975: 15). The 10th century Persian sailor and writer Buzurg ibn Shahriyār records in his *Kitāb ʿajāʾib al-hind* a series of raids along the East African coast by *Wāq* pirates. It is possible that the aggressors described were Austronesian peoples from either the Comorian Archipelago or Madagascar (Trimingham 1975b: 237; Wood, Dussubieux, and Robertshaw 2012: 72). During these raids Sofala and Qanbalu were pillaged, an event for which there is some archaeological correlation, i.e. the coetaneous abandonment of Tumbe on Pemba Island, Chibuene, and Unguja Ukuu, Zanzibar (Wood, Dussubieux, and Robertshaw 2012: 72). Buzurg ibn Shahriyār also described massive birds, the *roc* of Arabian legend, in the *Zanj* territories which kill by dropping their victims from high in the air (Freeman-Grenville 1982: 67). These creatures are theorised by many historians to have been the Malagasy Elephant bird, *Aepyornis* (Beaujard 2019b: 385). The 11th century Fatimid treatise *Kitāb*

Gharāʾib al-funūn wa-mulaḥ al-ʿuyūn, or the *Book of Curiosities* (Rapoport and Savage-Smith 2014), author unknown, contains chapters separated into celestial and terrestrial sections and multiple maps, including Oxford Bodleian Library MS. Arab. c. 90 fols. 29b/30a, an oval depiction of the Indian Ocean that appears to contain sailing itineraries (Horton, Boivin, and Crowther 2021: 381; Johns and Savage-Smith 2003: 7-8). The MS. Arab. c. 90 fols. 29b/30a map names a number of towns in coastal East Africa, including "[Lunjuwah]" (Zanzibar), "[Kilwalah]" (Kilwa), and potentially even Bazaruto Island, opposite Chibuene (Section 2.C.*II*.a) (Horton 2018: 245).

Al-Idrīsī, in the 12th century *Nuzhat al-mushtāq fī ikhtirāq al-āfāq*, describes Sofala as the "[land of gold]" and not a singular trading port, including the town of "[Siouna]", or Sayuna, (Jaubert 1836: 57, 66) noting the cosmopolitan nature of the settlements (Figure 1.2) (Trimingham 1975a: 126). Al-Idrīsī also distinguishes within this account between the inhabitants of Sofala and those from *al-Qumr*, thought be in reference to Madagascar, though the term would later come to include the Comorian Archipelago according to Claude Allibert (2015), both of whom traded within the Mozambique Channel and possibly as far away as India (Beaujard 2019b: 379, 381; Jaubert 1836: 67). The sailors of *al-Qumr* are described as traders but also opportunistic pirates in this account (Beaujard 2019b: 381). Later geographers and historians, Yāqūt al-Ḥamawī (12th-13th centuries), Ibn Saʿīd al-Maghribī (13th century), Ibn al-Mujāwir (13th century), and Aḥmad Ibn Mājid (15th-16th centuries) would perpetuate the name *Jazīrat al-Qumar*, Island of the Moon, for Madagascar (Beaujard 2019b: 379). The origin of this name is debated, as "at least three quasi-homonyms" exist (Beaujard 2019b: 379-380), *Qomr/Qumr*, Arabic transliterations of "Khmer", and *qāmrūn*, possibly from Chinese *Kunlun*, that might relate to the mythical source of the Nile at the Mountain of the Moon, southern cloud formations, the Southeast Asian empire of Khmer, or western members of said empire (Allibert 2001: 23; Ferrand 1919: 242, 313).

Arabic sources beginning from the 13th century, namely Ibn al-Mujāwir's *Tārīkh al-mustabṣir* and Shams al-Dīn al-Anṣārī al-Dimashqī's *Cosmography*, describe *al-Qumr* with greater familiarity. Within these accounts, nearly 200 years of direct and regular interactions between the people of *Qumr* and Aden, apparently occurring in the 11th-13th centuries, are detailed (Devic 1883: 240; Smith 2008: 138; Strange 1890). Al-Dimashqī specifically notes trade in *roc* feathers coming from the "twenty towns" of *Qomr* to Aden, a port which was well known to the Swahili due to vigorous Yemeni trade in the same period (Beaujard 2019$_b$: 381-382; Devic 1883: 240; Hornell 1934: 313). Archaeological evidence reveals that an East African/Yemeni relationship endured following the 13th century, but was primarily instigated by Muslim merchant sailors (Fleisher, *et al.* 2015: 106-107; Horton 2017$_b$: 488).

Figure 1.2: Atlas from al-Idrīsī's *Nuzhat al-mushtāq fī ikhtirāq al-āfāq*, Getty Images.

Additional descriptions of Mozambique Channel ports were written by the 15th century Arabian navigator, Aḥmad ibn Mājid, who detailed trading relationships and anchorages in the Quirimbas, on Madagascar, and the Swahili Coast in his *Kitāb al-fawāʿid fi usūl ʿIlm al-baḥr wa-l-qawāʿid, al-Urjūz as-sufālīyya,* and *Ḥāwiya* (Adamowicz 2012: 14; Beaujard 2019$_b$: 569; Freeman-Grenville 1975: 15). The 16th century navigator Sulaymān al-Mahrī, a student of Ibn Mājid, in his treatise *Al-ʿUmda al-mahrīya, Kitāb al-minhāj al-fakhir* discusses some two dozen, primarily northern Malagasy ports which he says were frequented by Swahili and Arab merchant ships (Allibert 1990: 160-163; Beaujard 2019$_b$: 569).

The Mozambique Channel, and by extension Madagascar, are scarcely mentioned in Chinese textual sources. The 12th-13th century Song politician and historian, Zhao Rugua, describes the *peng* bird, almost certainly the *roc* of Arabic mythos, and regional trade in exotic animals and ivory in his book *Zhu Fan Zhi*

(Beaujard 2019b: 384, 385). This compendium seems to borrow from various sources, particularly Zhou Qufei's 12th century treatise *Lingwai Daida*, and does not appear to differentiate between coastal East Africa and Madagascar (Hirth and Rockhill 1911: 37). Chao Ju-Kua, the 13th century trade commissioner of Fujian Province, wrote that the East African coast, including islands south of Cape Delgado, were both Islamic and habitually engaged in long-distance trade with the western Indian Ocean sphere (Freeman-Grenville 1975a: 21; Madiquida 2007: 32).

Given the relative dearth of extant historical documents, the literature review of this thesis primarily focuses on modern academic literature relevant to Islamic sites within the Mozambique Channel (Sections 2.C, 2.E, and 2.E), the Swahili (Section 1.E.*III*), and Islamisation outside of the Middle East (Section 2.B).

1.D.*II.* Material Culture Studies and Materiality Theory

Materiality and the multidiscipline, anthropologically-minded field of "material culture studies" from which the concept was birthed, position objects as the subjects of study, visualising them as "integral dimensions of culture" without which "social existence" could not be understood (Tilley, *et al.* 2006: 1-3). The term "materiality" is fluidly defined, ranging from empirical examinations of singular objects or collections of non-living "things" composed of matter, to approaches which place the broader tangible world in opposition to the "spiritual, ideal and value-laden aspects" of the human experience (Tilley, *et al.* 2006: 3). Academic models of materiality are complex and varied making it impossible to fully explore the concept here. However, comprehensive collections elaborating on materiality and its literary history by Daniel Miller (2005), Christopher Tilley (2006), and more recently by Ruth Van Dyke (2015) are available. The following serves as a brief introduction to some key scholarly contributions to the topic.

Concepts of materiality emerged into material cultural discourse in the early 1970s as the field was expanding beyond its foundational Marxist considerations of "resources, labour, consumption, and exchange" (Tilley 2006: 7). In the decades following its inception, materiality theory allowed for the variable investigation of the social functions of objects, explorations which increasingly incorporated and critiqued structuralist, semiotic, and phenomenological frameworks, and the affiliated notions of agency, cognition, power, symbolism, and objectification (Layton 2006; Miller 1987: 19-33; Tilley 2006: 8-9). A profound early entry into the discipline was Pierre Bourdieu's *Outline of a Theory of Practice* (1977), a work inspired by the *Phenomenology of Perception* by Merleau-Ponty (1962) and a commentary of "atemporal" structuralist approaches like that of Claude Lévi-Strauss (1955) (Tilley 2006: 9). Here Bourdieu presented the concept of *habitus*, or the inextricable impact of constructed environments on human perception and "sociopolitical relationships" (Van Dyke 2015: 5).

Bourdieu's work provided the groundwork for the anthropological engagement with materiality of the 1980s and beyond, which included Nancy Munn's (1983) study of the Australian kula and their exchange networks, Marilyn Strathern's (1988; 1991) formulation of the "dividual self", a composite entity bound socially, explored via interactions in Melanesia, and Daniel Miller's study of material consumption which resulted in the articulation of "objectification" processes, or the mutualistic influence objects and people have on each other (Miller 1987: 19-33; Van Dyke 2015: 5). Attempts to bridge a perceived gap between the relations of things and concepts, known as "material-semiotics", were also explored at this time (Law 2007: 7). One such methodology was that of actor-network theory, a term coined by Michel Callon in the early 1980s, but collaboratively constructed by the likes of Bruno Latour (1996) and John Law over the following decade (Law 2007: 2-7). Put simply, actor-network theory asserts that all reality is defined by the ever-shifting relational webs linking the social and natural worlds (Law 2007: 2). *The Social Life of Things* (1986), edited by Arjun Appadurai and released in the same decade, also examined fluidity of social realities by connected processes of commodification and decommodification to the creation of meaning and object identity, highlighting the importance of perceived value to the dynamics of human-object interplay.

Anthropological and philosophical interest in materiality continued to expand in the 1990s. Alfred Gell in *The Technology of Enchantment and the Enchantment of Technology* (1992) and *Art and Agency* (1998) argues that art, and by extension all things, are imbued with the intentions of their creators, and thus actively relay stored meaning to their surroundings, making the social environments of these objects their most important attribute (Hoskins 2006: 75-76; Wynne-Jones 2016: 5). It is in this manner that things act as nodes of social agency with the ability to influence human actors (Hoskins 2006: 75; Miller 2005: 13). Gell's theory was somewhat in contrast to that of Bourdieu who visualised agency as practical outcomes produced by "routinized" human activity (Tilley 2006: 9). Other prominent contributions to the discipline in this decade included *We Have Never Been Modern* (1993) by Latour which was a direct challenge to the division of natural and cultural discourse, instead positioning them as inseparable. Latour's approach was fundamentally extending Bourdieu's *habitus* past the constructed environment to include all external stimuli. The interdependence of subjects and things was explored further in the early 21st century through Webb Keane's theory of the bundle, which asserts that objects come to possess variable interlaced attributes and meanings through human interaction (2005: 187). A not dissimilar hypothesis, albeit truer to Miller's insights, was that of Ian Hodder's (2011) "entanglements", which argued for the corporeal entrapment of humanity and things via the construction of reciprocal obligations (Van Dyke 2015: 12). Academic material studies remain an evolving field of theory into the present-day, and have been applied in the African context (e.g. Insoll 2015; Wynne-Jones 2016).

The author examines Islamisation phenomena through tangible remains from coastal towns within the Mozambique Channel within this thesis (Section 1.C). Therefore, materiality theories, which allow for artefacts and constructed environments to preserve the social realities and intentions of their creators, serve as appropriate theoretical tools for this archaeological study.

1.D.*III.* Archaeological Survey

Understanding the processes of Islamisation within the Mozambique Channel required ground level survey of archaeological locales (Sections 3.B.*I* and 3.C.*I*). Two reconnaissance expeditions were completed for this thesis, both in 2018. The first was in northern Mozambique at the sites of Ibo, Matemo, Ilha de Moçambique, Quisiva Island, and the Tungi/M'buizi complex. The second, conducted in northern Madagascar, investigated Antsoheribory, Mahilaka, and Kingany. Pedestrian surveys familiarised the author with settlement layouts, surviving architecture, and some portable material remains, data crucial for comparing the sites and planning follow-up subsurface investigations.

1.D.*IV*. Archaeological Excavation

Archaeological material excavated by the author served as primary data for this thesis. Artefacts, outside of those few items collected during the survey, were obtained from the site of Kingany. Extraction was achieved through the excavation of twenty-five 50-centimetre^2 (cm) test pits and 2 larger test units, 1 x 2 metres (m) (Test Unit 1) and 2 m^2 (Test Unit 2), respectively (Section 3.C.*II*). The excavations generated quantities of materials, including key trade markers, that allowed for an extensive exploration of Islamisation in Boeni Bay.

1.D.*V*. Artefact Analysis

A range of materials were recovered during the surveys and excavation. Kingany Site II contained beads (clay, glass, and shell), ceramics (Antetikala and Antsoheribory phase wares (Section 4.C.*II*), Wealed-Ware, Comorian arch impressed wares (Figure 5.25), Chinese Longquan celadon, East Asian white ware, Kingany and Mahilaka phase wares (Figure 5.17), Southeast Asian Martaban storage vessel, Omani "blue-speckled" ware (Figure 5.18), Persian Gulf green-glazed wares, Yemeni water-jars), faunal and botanical remains, glass (bottles), metal (needles, coins, slag), shells, stone (chlorite schist, manuports, rock crystal), and spindle whorls (Chapter 4).

The structural framework of this research was built upon a branch of the historically informed field of Islamic Archaeology, that being the Africanist sub-discipline focused on the Sub-Saharan continent, which has been successfully employed in parts of coastal East Africa, the Horn of Africa, and the Sahel (Section 2.B.*III*) (Insoll 2003; 2004). The sites surveyed and the artefactual assemblage collected were interpreted with Islamic religious practice in mind. Even materials which did not readily correlate to recorded Islamic rituals/practice, or those which persist to this day, were scrutinised based on their proximity to orthodox expectations when possible. Artefacts and features inconsistent with the hegemonic understanding of the faith presented an intriguing juxtaposition from which, when understood as all parts of the same whole, individual and community specific practice was identified. These instances, however, were not viewed as anomalous by the author, for scholarship across Sub-Saharan Africa has strongly made the case for the syncretic realities of Islam (Jennings 1991: 545). Examples of so-called fusion practices are fairly common throughout the African continent, where early Muslim condonation of the "belief in angels, devils, *jinn*, divination, magic, witchcraft, and sorcery" enabled the simultaneous embrace of Islam and ancient indigenous belief systems (Jennings 1991: 545). It is within such actualities that archaeological examinations of the early Swahili, the relatively well examined neighbours of the Mozambique Channel communities, have shifted in the past three decades. This study continues along such interpretative threads.

1.E. Key Subjects and Concepts

The following section introduces the socio-cultural and religious setting and other information essential for understanding this thesis. Section 1.E.*I* provides a basic timeline for the foundation of the Islamic faith and its early expansion. Section 1.E.*II* introduces the concept of Islamisation. Lastly, the proximity of the channel to, and its engagement with, the eastern African mainland and the Swahili cultural sphere necessitates an abbreviated introduction to the region (Section 1.E.*III*), and the archaeological work previously undertaken there (Section 1.E.*IV*), as the foundation for research carried out in this thesis.

1.E.*I.* Introduction to Islam's Origins and Beliefs

Islam is the second largest religion in the world. The faith originated in the Hejaz, modern-day western Saudi Arabia, from which it emanated throughout the Arabian Peninsula and into Africa, where it is estimated that Muslims account for 27% of the population in the 21st century (Kettani 2009; Robinson 2004: 10). The central, non-divine figure in Islam is the Prophet Muhammad, 570-632, an Arab merchant who lived in Mecca. The Prophet received the first of many holy revelations from *Allāh*, the one God, via the Archangel Gabriel in the Cave of Hira, Jabal an-Nour, around the year 610 (Berkey 2003: 55-57). He would continue to receive messages in such a manner over a period of 23 years. The Qur'an, transcribed by companions of the

Prophet following his death, is the collection of the revelations given by Gabriel and the core scripture of Islam (Donner 2006).

As the Prophet Muhammad shared the message given him, his following grew, and so did the fears of the social elite of Mecca (Ünal 2006: 1323). Rising tensions led to the Prophet and his companions fleeing Mecca for Yathrib, later renamed *Madīnat an-Nabī* or simply Medina, in 622 out of fear for his life (Shamsi 1984). This event, known as the *hijra* (or departure), led to the solidification of the *Ummah*, the collective Muslim community, and marks the start of the Islamic calendar (Insoll: 1999: 10; Marom 2017: VII; Serjeant 1978: 4). Mecca and much of the Arabian Peninsula, including the nomadic Bedouin, were conquered by the Prophet's army in the years leading up to his death in 632, ultimately securing the religion a strong base from which to grow (Berkey 2003: 62). The closest companions of the Prophet led the new Muslim community following his death, in a period that would be later defined by fluctuating internal strife and violence for the *Ummah*. The first four successor caliphs, ruling roughly from 632 to 661, are known as the Rashidun, or the "rightly-guided" by Sunni practitioners. Under the Rashidun and subsequent dynastic Umayyad control, Islamic territorial holdings expanded rapidly across the Maghreb into the Iberian Peninsula, and eastward into Transoxiana and the Sindh (Berkey 2003: 77; Insoll 1999).

The *ḥadīth,* numerous anthologies of collated sayings attributed to the Prophet, some of which were recorded many centuries after his death, serve as the foundation for Islamic law, second only to the Qur'an (Robinson 1999: 85-89). It must be emphasised that the *ḥadīth* are not, and never have been, universally recognised by all parts of the Islamic world (Berkey 2003: 141). That does not diminish the importance of these collections to the development of the faith and its jurisprudence, however. Islamic dietary restrictions, while discussed briefly in the Qur'an (Sura 2:173 and 16:115), were largely articulated by the *ḥadīth*. A dichotomy of permissible, *ḥalāl*, and forbidden, *ḥarām*, foods developed in a manner similar to that of the Jewish *kashrut* tradition. Similarly, communal eating and food sharing customs, recommended in some *ḥadīth* and potentially tied to pre-Islamic Arab tribal traditions, became important social processes of active inclusion within Muslim communities (Ansari 2018; Insoll: 1999: 104). Animal proteins can be classed as *ḥarām* based on the dietary strategy enacted by the creature while alive, by specific jurisprudence, or by the method of slaughter (Sami'ullah 1982: 75). Identifying material manifestation of Islamic dietary activities, which can differ regionally and by sect, has been a technique utilised by scholars (e.g. Pawlowicz 2013: 393; Walshaw 2010: 151) to determine the presence of Muslim peoples within the archaeological record for decades (Chapter 2 and Section 4.B).

Like laws surrounding consumption practice, the mandatory duties to be fulfilled by a Muslim in their lifetime, known as the "Five Pillars of Islam" came from the *ḥadīth,* in this case the *ḥadīth jibrīl* (*Ḥadīth* of Gabriel). The material residue of these requirements, which are shared by almost all branches of Islam, can be identified in the archaeological record and are what Timothy Insoll refers to as "structuring principles" or "immutable elements of being Muslim" (Insoll 1999: 13). One such fundamental facet is the Muslim place of *ṣalāt*, prayer (Insoll 1999: 26). While some *ḥadīth* make clear that prayer is appropriate anywhere, others argue that a communal place for worship is much better (Insoll 1999: 28). According to the art historian Robert Hillenbrand, to be a mosque a building needs only "…a wall correctly oriented towards the qiblah, …the Black Stone within the Ka'bah in Mecca" (1994: 31). This is reflected archaeologically as *qibla* orientation is the only universal feature of mosques (Insoll 1999: 30-31). A recess or wall niche called a *miḥrāb* is typically used to indicate the *qibla* within a mosque.

1.E.*II.* Islamisation

While initially utilised as a somewhat simple synonym for conversion, by historians like Nehemia Levtzion (1979) who employed the term with caveats, in recent scholarship the exact definition and processes described by the term "Islamisation" extend much further than a unit of people converting to Islam (Carvajal 2013: 111; Eaton 1993: xxii). As the concept was explored further and applied to regions and population groups across the Islamic world, a scholarly debate arose around the perceived opacity of the term, which some saw as too vague (Peacock 2017: 1). However, Andrew Peacock argues in the introductory chapter to *Islamisation: Comparative Perspectives from History* that the malleability of word "Islamisation", to which he provides seven often used definitions, is actually beneficial, as a term must be flexibly defined to appropriately function in the academic investigations of the non-uniform, multi-phase, and multi-faced expansion of Islam (2017: 1-4). The definitions provided range from Islamisation as a differentiating tool that can function as an “alternative to conversion” when talking about individual versus societal level religious transition, to an amalgamation of other complex social transformations, including Arabisation, demographic shifts, and acculturation (Peacock 2017: 1-4). Despite the variability in its application, what is consistent throughout the current discourse around Islamisation is its use as a shorthand for the multitude of processes by which communities become Muslim, which were not always limited to conquest, proselytising, or state instigated top-down influence (Peacock 2017; Strathern 2017: 21). The literary history of the study of Islamisation is briefly outlined in Section 2.B.*III*.

This thesis will employ a definition which appears to best fit portions of Sub-Saharan and coastal East Africa and has been successfully utilised archaeologically, that being Islamisation as the manifestation of at least partial “religious and cultural change” within a community, including varying degrees of lifestyle adjustments identifiable within architecture, diet, epigraphy, funerary practices, and “social patterns” (Insoll 2017: 244). The utility of these concepts will be considered in the discussion (Chapter 5).

1.E.*III*. The Swahili

The Swahili cultural group, who occupy the East African coastal region, is the complex product of centuries of interactions between Africans, Arabs, Indians, Persians, East Asians, and Europeans (Pollard and Kinyera 2017: 932). One of the oldest known uses of “Swahili” was as a cultural-ethnic term by ʿAlī ibn Mūsa ibn Saʿīd al-Maghribī, a 13th century Andalusian historian, in his *Kitāb bast al-arḍ fī al-ṭūl wa-ʾl-ʿarḍ* for the communities of the East African *sāḥil*, Arabic for “the coast” (Horton and Middleton 2000: 16; Trimingham 1975a: 136).

The Islamic archaeology of most of Sub-Saharan Africa is notoriously understudied, but the Swahili Coast has had the benefit of intense academic enquiry since the 1950s (Insoll 2003; Pawlowicz 2012: 1; Wynne-Jones 2016). East African coastal archaeology has expanded in scope over the past 30 years becoming one of the best researched regions in Islamic frontier archaeology, alongside Nubia and Central Asia, albeit far from oversaturated academically (Section 2.B.*II*) (Peacock 2017).

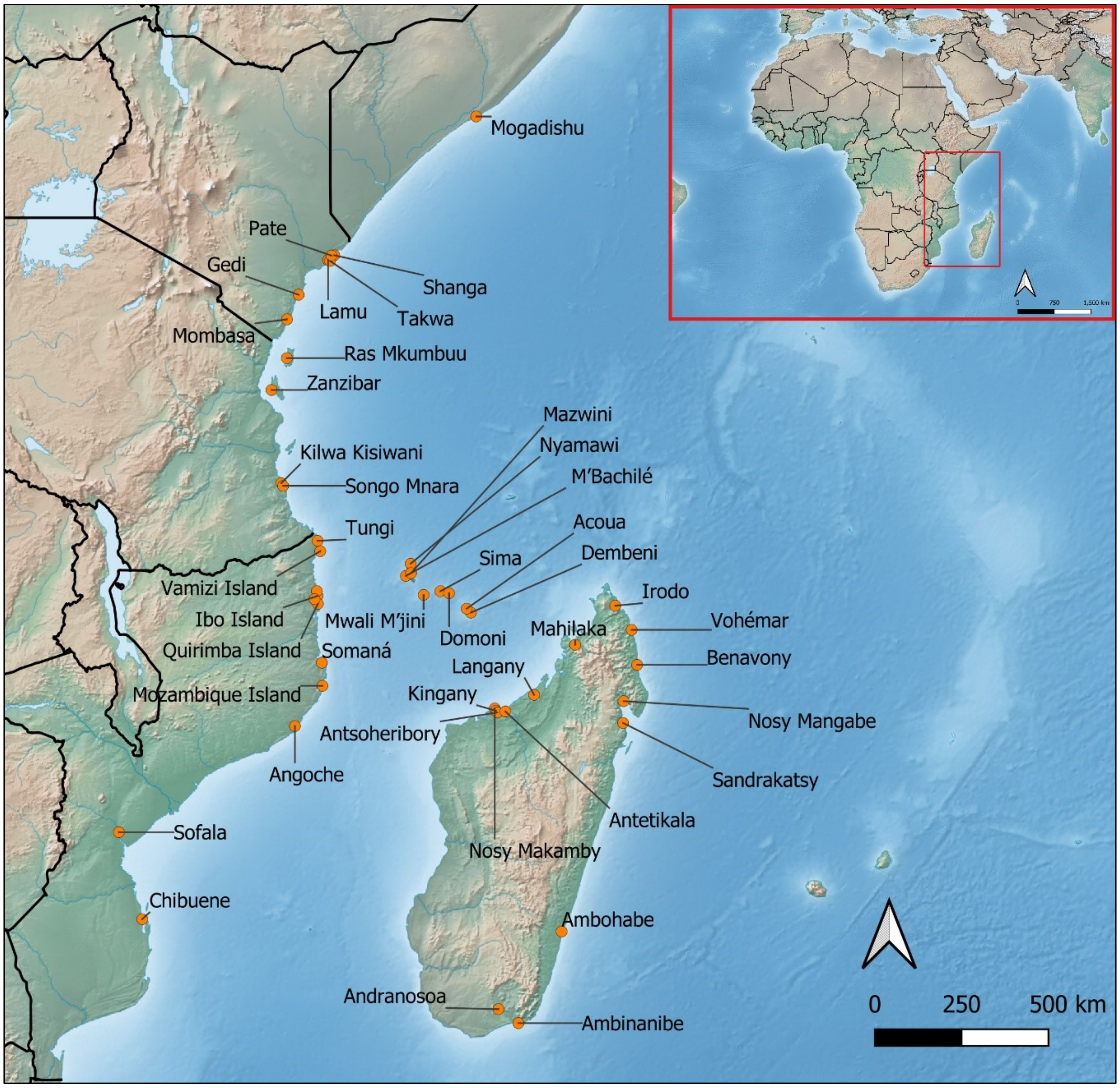


Figure 1.3: Select coastal East African and Swahili towns.

Nineteenth and early 20th century observers and cultural heritage enthusiasts struggled to interpret what on the surface appeared to be an ethnically ambiguous puzzle of cultural interactions. As these early scholars were working from positions of relative ignorance, they were limited to what they could conclude with certainty. A methodological and research fixation on the "stone town," or commercial centre of the Swahili past, patently curtailed this progress (Wynne-Jones 2016: 1).

Comparative analysis with geologically distant typologies was employed heavily, to varying degrees of success. For instance, Red Sea and Persian Gulf ports were habitually referenced as having made substantial contributions to Swahili coastal styles (Insoll 2003: 173). Sir John Gray, author of *History of Zanzibar from the Middle Ages to 1856* provided, unintentionally, an antiquarian history of the Zanzibar Archipelago, themes of which were later extrapolated to much of East Africa (Flint 1963: 678). Gray believed that Ras Mkumbuu, Pemba, was the ancient city of Qanbalu described by al-Masʿūdī, an assertion investigated by the archaeologist James Kirkman during his excavation of the site in the 1950s, at the behest of Gray (Casson 1989: 6; LaViolette 2004: 135). Kirkman, having focused his efforts on monumental stone structures at the site, encountered no archaeological strata preceding the 13th century and concluded that Ras Mkumbuu was not Qanbalu (Horton 1990: 4; Kirkman 1959a: 173; LaViolette and Fleisher 2009: 434). However, Mark Horton has since located evidence for 10th century occupation at the site (Horton and Clark 1985: 169; LaViolette and Fleisher 2009: 438).

While not entirely unfounded when discussing the latter centuries of the second millennium, early theories of Middle Eastern colonial socio-cultural hegemony in East Africa proved to be erroneous. Dedicated studies by Neville Chittick (1974a), Abdul Rahman M. Juma (2004), Mark Horton (1996b), Felix Chami (2006), John Middleton (1992), Stephanie Wynne-Jones (2016), Jeffrey Fleisher, and Adria LaViolette (2009), significantly advanced the field, facilitating the creation of less opaque analytical models of the early Swahili world. As studies have expanded, so have the available interpretative frameworks, progressing from strictly descriptive to theoretical, a trend that has enabled the production of varied, and often conflicting, informed hypotheses, perhaps the most tell-tale sign of engaged academic thought surrounding a region.

Swahili, today an ethno-cultural identity, and the associated language, Kiswahili, are best defined in a historical context as a socio-cultural phenomenon ranging from coastal Somali to Mozambique (Allen 1993). Coastal East African cities developed from early-first millennium small Bantu communities into hundreds of cosmopolitan, but decidedly African, settlements inhabited by farmers, skilled artisans, and mercantile-minded sailors, many of whom were Muslims (Connah

2001: 182; Horton 1987: 86). These settlements formed a "Swahili Corridor" which established "cultural unity along this coastal zone, visible both linguistically and in the material culture" through active engagement in Indian Ocean networks, facilitated by the monsoon winds (Horton 2018: 342).

Despite being geographically separated from the mainland, using the term Swahili to define aspects of early settlements in Madagascar is not wholly incongruous. Archaeological research on northern coastal sites has produced data which confidently establishes trends of Mozambique Channel interaction between locales such as Mahilaka and Nosy Mangabe with contemporary communities of the Comorian Archipelago, which possessed assemblages definable as proto-Swahili/Swahili, and their trade networks (Dewar and Wright 1993: 430-431; Radimilahy 1998) (Sections 2.E.*II*.a and 2.E.*III*.a). Characteristics inextricably linked to the concept of the Swahili, namely Islam, mercantilism, and coastal dwelling, are not inappropriate for discussing early to mid-second century Malagasy entrepôts, described at length in Section 2.E.*III*, as these communities embodied these attributes in most cases.

1.E.*IV*. Swahili Archaeological Overview

The Comoros, northern Mozambique, and some portions of coastal Madagascar have been recognised by UNESCO as representative of a milieu that is distinctly Swahili (Section 1.E.*III*), while leaving the early Islamic history of the region relatively unstudied (Alpers 2001; Radimilahy 1998; UNESCO 2017$_c$). This thesis continues a long line of archaeological enquiry into Africa's eastern coast. Chittick's pioneering mid-twentieth century excavations in the region including, but not limited to, Kilwa Kisiwani and Manda Island, are the foundation from which much of the modern archaeological research has expanded. In particular, his excavation at Kilwa Kisiwani produced an expansive and somewhat chronologically grounded dataset against which the architecture, ceramics, *et cetera*, of hundreds of sites have been analysed. However, his work was not without fault. The material recovery techniques utilised by Chittick heavily biased the data produced towards monumental stone constructions, ultimately misrepresenting the compositions of the settlements themselves and undermining the importance of the Swahili hinterland in the development of the coast (Chittick 1977; Connah 2001: 192). The Kilwa sequence was recently re-interpreted and refined by Wynne-Jones, Horton, Fleisher, and Jesper Olsen (2018) through the radiocarbon dating of newly explored deposits at the site.

In the early 1980s, Linda Donley-Reid produced a series of ethnographic studies from data collected from Swahili homes on Lamu Island, Kenya, which she compared to contemporary examples in Gujarat, India (Donley-Reid 1984). These studies sought to define structuring constants within the Swahili cultural landscape which provided a conceptual framework that peaked in popular usage shortly after its inception, but has since been challenged by numerous academics, including Fleisher (2015: 73) and Wynne-Jones (2016: 165-167). Her attempt to project present-day observations into the deep past as whole social mechanisms produced a decidedly "ahistoric" interpretation of East African life which fixated on Arab-ness (Meier 2017: 634). Donley-Reid's work, while heavily scrutinised since its publication, does serve as a valuable ethnographic record of mid-20th century life in the Lamu Archipelago.

In close proximity to and concurrent with Donley-Reid's work, Horton's seminal excavations at Shanga, Pate Island, revealed an extended continuity of habitation, practice, and architectural form manifested in progressive stages of local mosque development, beginning with earthen construction in the 8th century (Horton 1996b). The developmental stages of the Shanga mosque, as described by Horton, transition from wattle-and-daub to coral-and-lime fabrication with each progressive stage replicating the general layout/alignment of the preceding strata, clearly exhibiting a gradual increase in communal investment into monumental Islamic architecture (1996b). This is a visible testament to both local stylistic contribution to Islamic architecture, as opposed to Arab/Persian colonial import, and the increasingly central role of the Muslim faith in the community (Wynne-Jones 2016: 162).

Archaeological investigation into coastal East Africa in the latter half of the 20th century was not limited to the campaigns of western scholars. Juma, the head of the Zanzibar Department of Antiquities, Museums and Archives, collaborated, promoted, and facilitated research on Zanzibar, that brought early attention to the archipelago, and by extension the region's precolonial past, which had been previously neglected (Horton 1990: 4). Juma recorded dozens of sites in the archipelago and led a thorough examination of Unguja Ukuu on Zanzibar (Horton 1990: 4; Juma 2004). Chami's excavations on Mafia and Juani, meanwhile, revealed an artefact assemblage which emphasised the localised origin of East African/Swahili industries and trade and their pre-Islamic role in the greater Indian Ocean exchange network (Chami and Kwekason 2003: 77). Investigations led by Chami in the Tanzanian hinterlands not only connected coastal locales with inland agrarian sites through a common ceramic manufacturing network, but showed that in some cases these early coastal settlements acted as precursors to the Swahili stone town (Wynne-Jones and Fleisher 2015b). Chami's contributions included the rephrasing of Early Tana Tradition, a mid-late first millennium typology named by Horton (1984) and utilised as a marker of the Proto-Swahili interaction sphere, to Triangular Incised Ware (TIW), an effort which removed perceived northern bias (Wynne-Jones and LaViolette 2017: xxviii).

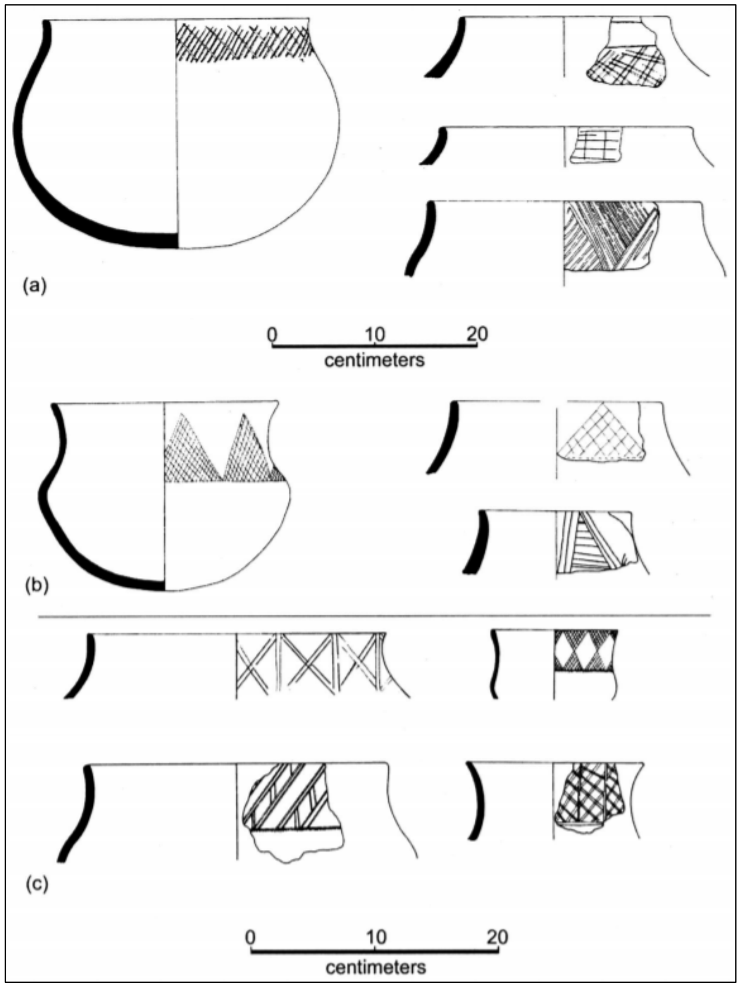


Figure 1.4: Illustrated examples of TIW, Fleisher and Wynne-Jones 2011: 250.

Work in the region progressed rapidly in the late 20th century. Middleton's anthropological studies of the East African coast emphasised the role of history and culture in the formation of the Swahili (Garlake 2002: 22). Wynne-Jones's excavations of domestic spaces in Kilwa Kisiwani and Songo Mnara have produced data that directly challenges Donley Reid's previous assumptions of spatial usage continuity within the Swahili house (Wynne-Jones 2016: 165-167). Fleisher and LaViolette's work at various sites on Pemba Island, Tanzania, has increasingly expanded ceramic typologies, and current understandings of Indian Ocean trade relations within the region. Excavations of wattle-and-daub structures at Tumbe and Chwaka, Pemba, found imported goods, beginning within the earliest contexts, revealing that it was not only elites, presumably dwelling in stone-built, permanent houses, who were engaged in Indian Ocean trade (Wynne-Jones and Fleisher 2015b).

While these scholars have all made significant contributions to the development of an archaeological framework for the interpretation of the early Swahili, their work has been primarily focused on Kenya and Tanzania, a trend of research which was in recent decades partially dictated by regional variations in the accessibility of cultural remains, leaving much of the Mozambique Channel on the peripheries.

1.F. Kingany: Summary of Previous Archaeological Enquiry

The multicomponent site of Kingany, was the primary focus of archaeological investigation for this thesis. It was chosen by the author to explore Islamisation in the Mozambique Channel with regards to the research questions outlined in Section 1.C. The following describes the archaeological understanding of Kingany prior to this research.

Kingany is composed of three distinct clusters, Sites I-III, which include dozens of monumental tombs, two mosques, a possible *madrasa*, four houses, and multiple stone walls dating to the late 15th/early 16th centuries (Figure 1.5) (Dewar and Wright 1993: 442; Vérin 1986: 162; Wright, *et al.* 1996: 53). The site, which is today fully encompassed by the small fishing village of Morafeno, is located less than 200 m from the shore, on a series of wooded, shallow dunes. Archaeological evidence seems to suggest that, while not a major political player within the Mozambique Channel, Kingany did have a number of small auxiliary settlements, including the site of Maronono (Wright, *et al.* 1996: 54). In his 15th century nautical treatise *Ḥāwiya*, Aḥmad ibn Mājid describes the settlement of Anāmil at "Great Bear at nine fingerwidths above the horizon," (Beaujard 2019b: 570) which might "precisely [correspond with]" the "trading settlement of Kingany" (Viré and Hébert 1987: 76). If correct, this marks one of the few surviving pre-colonial period descriptions of the settlement. However, Gerald Tibbetts (1979) argued that Anāmil was located at the mouth of the Namela River, considerably south of Boeni Bay (Beaujard 2019b: 570).

Figure 1.5: Map of the Boeni Bay.

Vérin argues in *The History of Civilization in North Madagascar* that Boeni Bay was the first point of Portuguese contact with Madagascar, based on contemporary Portuguese historical accounts, namely those of João de Barros and d'Albuquerque (Dewar and Wright 1993: 442; Freeman-Grenville 1975; Vérin 1986: 77, 173). João de Barros details an incident in May 1506 in which Portuguese Admiral Tristan de Cunha stumbled upon the Malagasy coast and destroyed a town after its inhabitants would not engage in trade and subsequently attacked his Mozambican guide, named Bogina (Vérin 1986: 172). The Portuguese raided the town early in the morning, but only an elderly woman was present (Vérin 1986: 172). They razed the settlement and then sailed northwards. Vérin believes that Kingany was the unnamed settlement (Dewar and Wright 1993: 442; Vérin 1986: 171-172; Wright, *et al.* 1996: 54). Local tradition concurs, with narratives of refugee migration deeper into Boeni

Bay seeking additional protection, first relocating to the southern mainland and then Antsoheribory Island (Dewar and Wright 1993: 442; Vérin 1986: 173). De Cunha was responsible for the ruination of other northwestern Malagasy towns as well, e.g. Nosy Manja (Vérin 1986: 173).

Archaeological study of Kingany was first conducted by Vérin in the late 1960s, followed by a material re-examination of his findings in the early 1990s (Dewar and Wright 1993: 442). Excavations focused on standing architecture, specifically houses, tombs, and a mosque, in Kingany Sites I and II. A large assemblage of imported trade goods was recorded including: Martaban jars from Southeast Asia, various 14th-15th century East Asian Celadons, and 15th century Islamic monochrome vessels (Wright, *et al.* 1996: 53-54). Unique finds included three dressed coral tablets (Vérin 1975a: 332). A coral tombstone from Site I contained the Qur'anic inscription "May God be praised. There is no God but God and Mohammed is his prophet" (Vérin 1986: 163, 167). Local ceramic forms were diverse, demonstrating complex regional connections between 15th century Malagasy locales, specifically Kingany to Anosy, southeast coast, and Imerina, central highlands (Vérin 1986: 165). Chlorite schist vessels, likely from the Vohémar region, further evidence these internal trade lanes (Vérin 1986: 166). A single radiocarbon date, from a charcoal sample Vérin obtained during his excavation, was dated to 1015 calibrated age, with a "95 percent probability that the true date [fell] between… 880 and 1210" (Wright, *et al.* 1996: 47). Despite positive results from Vérin's campaigns, academic interest in Kingany was minimal following his project's close.

Site I, the closest set of ruins to the abandoned fishing village of Kingany, is a concentration of over a dozen Islamic tombs and a house with a series of enclosure walls (Vérin 1986: 161). Vérin describes the tombs of Site I as "homogenous in style," being rectangular "winged" structures constructed of beach rock and lime mortar (Figure 1.6) (1986: 163). Three of the tombs had associated carved coral tablets, described above (Vérin 1986: 163).

Vérin argued that the house in Site I was that of a 15th century "middle-class family" (1986: 161). The bathroom, the northern-most room in the two-room structure, was sunken relative to the rest of the buildings and contains benches and a floor drain (Vérin 1986: 163). A large Martaban jar was installed in a cavity in the northwest corner of the room, likely serving as a water receptacle (Vérin 1986: 163). Site I's walls functioned as enclosure boundaries for the aforementioned home and did not necessarily fulfil a defensive role, as they do not surround any known structures.

Figure 1.6: Kingany ruins, Site II Tomb 22.

Site II, located on the eastern periphery of Morafeno village and no more than 180 m from the shore, is composed of more than two dozen Islamic tombs, two mosques, and three houses. The negative space between visible architecture, paired with the archaeological discovery of postholes, demonstrates that Kingany Site II once possessed more organic/impermanent buildings than stone structures (Dewar and Wright 1993: 442; Vérin 1986: 163). Vérin notes that the archaeological sequence for the site, especially those of the stone tombs show that the community was wealthy (Vérin 1986: 163). The exterior of the Tomb II8, the oldest known stone tomb in Madagascar at the time of Vérin's expedition, is decorated with inset panels and coral tablets, two of which were collected (1986: 163). A *miḥrāb*-like arch is found on this tablet, a decoration complimented with a lotus flower motif, described as being "Islamic Indian" and not Persian (Section 5.B.*I*.b.*i*) (Vérin 1986: 163, 167).

Vérin notes that tombs in Site II are often decorated with coral bosses, a technique employed on the Swahili Coast up to the late 15th century, when decorative insets lined with imported Persian and East Asian vessels became more popular (Pradines 2012: 138; Vérin 1986: 165; Zhao 2015: 11). Those structures in the site which contain these elements might predate the transition from coral to the architectural display of ceramics, indicating occupation at least as early as the 15th century. This chronology is supported by the archaeological sequences constructed from a Site II house excavation. Vérin argues that the absence of Hadramauti black-on-yellow and *sgraffiato* ceramics makes it unlikely that Kingany was much older than the 15th century (1986: 165). Local ceramic typologies recovered at Site II are highly varied, including triangular impressed, wavy/zig-zag-line vessels identical to those found at the contemporaneous Malagasy locales (Vérin 1986: 165).

Hundreds of metres of town wall are located south of Site II. Vérin theorised that this wall marked the edge of the settlement, functioning as a symbolic boundary and to discourage wild animals, but not truly defensive as it was one metre tall at the highest (1986: 167). East of this wall, south of Morafeno, is a concentration of three tombs, Site III. Site III contains a pillar tomb not dissimilar from those common on the East African coast. The pillar has a square foundation that is octagonal at approximately a half-metre above its base which is, according to Vérin's observations, like the pillar tomb tradition of Kaole, Bagamoyo, Tanzania (1986: 167). The pillar tomb is approximately 3.4 m tall at its apex, with an enclosure of 4.4 by 3.6 m (Vérin 1986: 167). Vérin recommended a 15th century origin for the structure based on Swahili architectural parallels (1986: 167). Tradition holds that Sultan Manafy is interred at this tomb, while a foundational figure, Kambamba, is buried on Antsoheribory, a chronology which does not align with archaeological evidence (Section 2.E.*III*.b) (Vérin 1986: 167). Most other tombs at Site III are heavily degraded and/or covered in foliage.

Kingany was archaeologically neglected following Vérin's investigation until this study.

1.G. Thesis Outline

The structure of this study proceeds as follows. With the thesis topic framed, key definitions explored, and the research context and previous research introduced, Chapter 2 provides a literature review and examination of previous archaeological analysis of sites within the Mozambique Channel between approximately the mid-first millennium to the arrival of the Portuguese and subsequent European powers at the close of the 15th century. Chapter 3 details the environments present in the Mozambique Channel and presents the fieldwork methodology and data collection techniques utilised in this study. The analysis and interpretation of artefacts encountered/collected during the fieldwork in northern Mozambique and northern Madagascar is then discussed in Chapter 4.

The discussion in Chapter 5 considers the material links between the fieldwork area and locales throughout the Mozambique Channel and western Indian Ocean, so as to explore the materiality of Islamisation in the region. Chapter 6 presents the conclusions to the research and their implications in relation to the research goals outlined in Section 1.C.

1.H. Conclusion

This introduction outlined the central topics and research questions of the thesis. The archaeological history of the site of Kingany, the primary empirical focus of this thesis, and the Swahili was presented along with a brief introduction to Islam and the concept of Islamisation. Chapter 2 reviews studies of antecedent and coetaneous Mozambique Channel archaeological sites crucial to the interpretation of Islamisation based on the materials from northwest Madagascar.

Chapter 2. Literature Review

2.A. Introduction

The Swahili Coast, especially the northern Mozambique Channel, has historically been a region defined by transition. This notion of flux has manifested in many ways, be it African hinterland to coastal Swahili, local to regional to ocean-wide, Islamic to non-Islamic, and Arab versus European (Newitt 1973: 211). There is a considerable amount of truth to be found within this series of dichotomies. However, a simplistic understanding of Mozambique Channel communities does not adequately represent such interconnected confluence of cultures, which were demonstrably more than just piecemeal collections of local and imported societal frameworks. Understanding the complexity of the region demands a multifaceted approach to the subject material. This includes a review of the available literature from multiple, interrelated, subject areas.

To properly position data acquired by the author from excavations in the Boeni Bay (Section 2.E), a brief introduction to the Islamic frontier, the Swahili coast (Sections 1.E.*III* and 1.E.*IV*), and the Mozambique Channel in general is necessary. In addition to providing a historiographic review of academic trends within the field, the focus in this chapter is Islamisation, as the focal point of the research, and the archaeological sites in this review are chosen to assess such phenomena.

2.B. Islam outside of the Middle East

2.B.*I*. Introduction

The Mozambique Channel, though decidedly distant from the core holdings of the Islamic states of the early-second millennium, certainly belonged to the extended and fluid Islamic cultural frontier of the period (Section 2.B.*II*). This section aims to frame the work of this thesis within the larger academic exploration of medieval Islamic periphery while familiarising the reader with the development of key conceptual tools employed within the field of study, namely Islamisation (Section 2.B.*III*).

2.B.*II*. Conceptualising Islamic Frontiers

Originally developed to complement mid to late 19th century art historical preoccupation with "oriental" material culture, the field of Islamic Archaeology began early in the 20th century (Vernoit 1997). Pioneering research by Ernst Herzfeld, with excavations at Samarra, Iraq, between 1911-1913, and later Persepolis, Iran, regarded the archaeology of the Islamic period not as a simple amalgam of the Late Antique world, but as something novel and worthy of exploration beyond an art historical, auction house perspective (Grabar 1971; Yar-Shater 2003: 290-293). While the discipline developed steadily through the 20th century, the fringes of the early Islamic world were habitually afterthoughts in the field. That said, conceptualisations of imperial, specifically Ottoman, frontiers were pondered at length by some Orientalist historians of the time, specifically Fernand Braudel and Paul Wittek (Heywood 2008: 168; Wittek 2012). While these investigations largely focused on textual interpretations and boundary delineation, Wittek would come to understand the Ottoman frontier as a "zone of transition", a less rigid visualisation than that of his contemporaries (Heywood 1999: 241). Conceptualising frontiers as non-linear horizons of interaction between cultures, ethnicities, and polities would prove crucial for the creation of more nuanced understandings of the Islamic peripheries.

Early archaeological investigation into the frontiers of the *Dar al-Islam* focused on landscapes containing extraordinary monumental archaeology, in the case of Soviet efforts at citadels in Central Asia, or took the form of ethno-historical analysis (Field and Prostov 1938: 259; Litvinskiĭ 2012). In parts of Sub-Saharan Africa similar ethno-historical research included the documentation of cultural attributes observed in historic populations, material and otherwise, seen as possessing an "Arab-ness", which were subsequently quantified and projected into the past (Connah 2001: 217; Meier 2017: 634). For the Swahili, these studies corroborated local oral histories and traditional narratives that belaboured Swahili Arab and/or Persian heritage, histories now widely interpreted as popular myth locally generated to gain additional status in international trade networks, and privilege under colonial governments (Freeman-Grenville 1975: 220; Wynne-Jones 2016: 12). It was the case that many of these early studies prioritised reconstructing Middle Eastern connections, heavily relying on first-hand accounts produced by medieval scholars in the Islamic heartland as opposed to understanding the subject locale for that region's sake. Given this, it is not surprising that early-to-mid 20th century academic hypotheses regarding frontier spaces habitually sought to assert cultural exogeneity.

Despite being geographically positioned outside of the territorial holdings and political authority of all major Islamic Caliphates, and not zones of "conquest or annual campaign" (Eger 2019: 4), large areas of Sub-Saharan Africa possessed sizeable Muslim populations bordering intercultural horizons who engaged in, and contributed to, Islamic networks (Insoll 2003; Lightfoot and Martinez 1995: 473). Excluded from much of the scholarship on the Islamic frontiers, coastal sections of East Africa certainly met the criteria to be considered such. There was archaeological engagement with theories of coastal East Africa as an Islamic colonial frontier in the first half of the 20th century, e.g. Kirkman at Gedi (1964: 22) and Chittick at Kilwa (1974a), but, outside of socio-cultural exogenous assumptions, the degree to which this work was explicitly understood as being studies of frontier spaces at the time is debatable (Chami 1998: 205). Archaeologists in this period were operating from a point of almost zero preexisting data for many frontier zones, and academics understandably focused their enquiry on the "low-hanging fruit", those principally being conspicuous citadels and trading hubs. As a result, the legacy of early-mid 20th century research manifested disproportionately in its representation of the grandiose and emphasis on luxury trade relations as integral components of the Islamic frontier. The utilisation of *faḍāʿil* texts in praise of a city in these studies certainly only bolstered hub-centric hypotheses of the time (Eger 2019: 6).

In response to rapidly expanding regional instability in the early 21st century, which restricted access to many archaeological sites within the Middle East, academics shifted their attention to the many major and minor Islamic frontiers (Eger 2019: 3, 19). Looking towards the oft-neglected peripheries allowed for a review of popular theoretic frameworks which had dominated understanding for some time, in particular, R. W. Brauer's adapted "core-periphery model" (Eger 2019: 5). Likely inspired by the world-systems analysis of the economist Immanuel Wallerstein (1974), work influenced by Braudel (1958) and his *longue durée* models, Brauer utilised primary source textual evidence, dating between the early 9th-14th centuries, to postulate that frontiers were zones containing “mixed border population[s]” which engaged in trading economies that supplied urban societal cores (Brauer 1995: 55-56, 69). Such core-periphery systems, in which border zones were exploited by the urban centres and suffered from technological, scholarly, and cultural disadvantages as a result, have long been challenged as over-simplistic and colonialist (Lightfoot and Martinez 1995: 487). Despite these valid criticisms, Brauer considered internal and minor frontiers at a time when they were rarely addressed (Brauer 1995: 8).

Tim Champion echoed such sentiments in the opening to his 1995 collection *Centre and Periphery: Comparative Studies in Archaeology*. Champion argued that archaeological engagement with, and understanding of, “spatial organization of human society” was fundamentally Eurocentric, having itself first emerged from the intellectual discourse of 19th century colonialism (1995: 2, 4). Functionally constrained by a Western European historical lens, such interpretations often failed to reflect disparate social realities (Champion 1995: 3). Despite his general skepticism, Champion did find merit in historical observations made by Arnold Toynbee (1954), wherein territorial peripheries became cores, ultimately conceptualising centres as less-rigid, non-singular clusters (Champion 1995: 3). Champion argued that the later world-system designs of Wallerstein (1974) and “Peer Polity” concepts by Colin Renfrew (1986), were fundamental to the development of an anthropologically and geographically informed centre-periphery discourse, which he believed was “superior to… [older] diffusionist” reasonings (Champion 1995: 10) that had become somewhat of a catch-all explanation for complex social processes (Collis 2017: 61). The closing decades of the 20th century saw centre-periphery frameworks increasingly applied to large-scale archaeological analysis in ways that sought to identify case-specific mechanisms influencing exchange and political development (Champion 1995: 17-18; Collis 2013: 15). Thus, centre-periphery models, once freed from their inceptual framings within global capitalist economies and Eurocentric cultural dominance, interlaced cultural, economic, geographical, and broad political concerns marking a shift in archaeological thought that allowed for more nuanced descriptions of the long-term processes observed as archaeological phenomena in relative frontiers spaces

(Champion 1995: 11; Collis 2017: 68). While academic discourse has generally shifted away from the conceptualisations of centre-periphery interactions which permeated thinking for much of the preceding two centuries, namely those theories which visualised such relationships as gradients of increasingly unequal exchange effectively radiating from societal cores, there still lingers a strict dichotomy of perception constructed by colonial minds, which are in the author's opinion not reflective of the real world (Collis 2017: 68; Prestholdt 2008: 5-6). Furthermore, the lasting legacy of imperialism and colonialism, and present-day exploitation birthed from these policies, has manifested in an asymmetrical advancement of thought, as core-periphery models might be utilised for Sub-Saharan Africa or the Global South, but not elsewhere, much to the detriment of relevant cultural studies (Horton, Boivin, and Crowther 2021: 399-400; Prestholdt 2008: 5-8).

Corrective models discussed in A. A. Eger's 2019 collection, *The Archaeology of Medieval Islamic Frontiers*, discusses "peripheries" as centres in their own right, interacting with their respective core territories in such ways as to exert their own "political, social, and cultural" agendas (3-21). This hypothesis was one of the central frameworks from which this thesis operated.

2.B.*III*. Investigating Islamisation

The term "Islamisation", initially emerging in mid-20th century Islamic studies discourse as a vaguely defined synonym for conversion, has since come to encompass a "myriad of different phenomena" (Section 1.E.*II*) (Peacock 2017: 1). Mischaracterisations regarding the spread of Islam in the formative years of the faith found a significant foothold in western academia thanks in part to the British orientalist and Islamic art historian Sir Thomas Arnold's pioneering 1896 work *The Preaching of Islam: A History of the Propagation of the Muslim Faith*, in which conversion to Islam was attributed to "missionary" actions bringing about proselytisation, a narrative framed in a way familiar to the Christian experience (Arnold 1896; Peacock 2017: 4-5). Arnold's argument has since been critiqued by historians like Andrew Peacock using historical evidence that strongly recommends the exact opposite (Peacock 2017: 5). The Umayyad dynasty actively discouraged conversion in conquered territories, as it is apparent that they viewed the religion as an Arab one, while Christian and Jewish populations enjoyed a significant degree of protection and incorporation into the political sphere, thus seeing little incentive to convert (Peacock 2017: 5; Wasserstein 2001: 55-56). The rise of the Abbasid Caliphate, in approximately year 133 of the Muslim calendar, saw attitudes change, but surviving *khutbas*, sermons, of the period seem to express that even then gaining converts was not a state priority (Peacock 2017: 5). This might, in part, have been a result of the ease by which an individual could become a Muslim, in some cases only needing to recite the *Shahadah*, "there is no deity but God, and Muhammad is the messenger of God", three times while supervised by a "qualified witness" (Peacock 2017: 5). It would seem that a low barrier for entry paired with economic incentives, e.g. avoidance of the *jizya* (poll tax), and the somewhat *laissez-faire* attitude of the faith in regards to orthodoxy at the time were seen as sufficient enough Islamising mechanisms within the core territories (Peacock 2017: 7).

Throughout the latter half of the 20th century the concept of Islamisation gradually shifted from simple conversion to broad processes of societal change, including "Arabisation, vernacularisation, conversion, demographic change and the spread of Islamic culture" (Peacock 2017: 4). Though the exact limitations of the term remained rather opaque, as the concept was progressively applied to more regions and diverse population groups, exact methodologies and theoretical frameworks for measuring the phenomena were developed (Carvajal 2013: 120). One of the first significant attempts to depict the exact mechanisms of change and measure the outcomes in population units was Richard Bulliet's *Conversion to Islam in the Medieval Period: An Essay in Quantitative History* an exploration which presumed a correlation between Islamic conversion and a definably Islamic society (1979: 1). Bulliet employed data amassed from historic chronicles and "biographical dictionaries", a literary genre present for most of Islamic history, to reconstruct and compare rates of Islamic conversion within Egypt, Iran, Iraq, Spain, and Syria while testing the relationship of "political power and religious eminence" (1979: 3, 9, 129). These trends were presented visually throughout as dozens of comparative charts which were then compiled into cumulative, annotated "S-curves", a tool representing the percentage of a specific regional population converted over time, and graphs that sought to depict the impact of political events on conversion trajectories (Bulliet

1979: 43). His interpretations of perceived correlations would ultimately introduce concepts of Arabisation, migration, and social Islamisation as both explanations for observations and outcomes of conversion, particularly in Iran and Iraq (Bulliet 1979: 134). While the methodology developed by Bulliet had an undeniable impact on the study of Islamisation through historical texts and epigraphy, it was not without its faults, the most significant of which was the strict limits to its applicability (Peacock 2017: 6). Islamic societies lacking the rich and contextualised biographic chronologies upon which his methodology relied, such as Southeast Asia, or those which possessed chronicles of suspect origin, such as those produced for Swahili patrician lineages, were categorically unfit for examination (Horton 2001: 456; Peacock 2017: 6).

Theoretical frameworks for understanding Islamisation that were not as reliant on extensive literary or biographical datasets were developed by John Trimingham (1968) and Robin Horton (1971), later expanded upon by Humphrey Fisher (1985). Horton's argument focused on African belief systems, which he interpreted as being two-tiered, and the manner by which world religions found room to thrive on the continent, namely shifting societal emphasis to the macrocosmic (supreme being) from the microcosmic (natural spirits) (Fisher 1985: 153). While this theory did instigate discussion, its utility was ultimately limited by accessibility and a lack of identifiable general principles (Fisher 1985: 154). Phased Islamisation models from Trimingham, later refined by Fisher, provided such markers. Stages within these models were defined as contact and exchange or "Germination", followed by partial assimilation or "Crisis", which over time led to religious power shifts within contacted communities or "Reorientation", and/or metaphorical "Quarantine" of isolated pockets of converts, eventually giving way to population "Mixing" or religious syncretism, and ultimately, sometimes centuries later, Islamic "Reform" (Insoll 2017: 246). This flowchart design was not fabricated with the expectation of applicability to all historically "new" Muslim communities but did provide a rather comprehensive interpretive ladder for understanding societal change in some Islamised regions (Fisher 1985: 154).

Syncretism as a concept has been explored by many, including Hendrik Kraemer (1937) and Heinz Bechert (1978), and, much like the applicational trajectory of Islamisation, has developed into a phraseology implicitly depicting a spectrum of manifestations. While Kraemer's work framed syncretism as the outcome of a dualistic relationship achieved at the intersection of non-confrontational micro and macrocosmic understandings, for which he used historically attested Indonesian societies as an example, Bechert sought to ground the discussion by categorising syncretic expression into classes "ranging from single… adopted elements" (Brakel 2004: 7) to religious hybridisation (Bechert 1978: 21). Within both structures, syncretism was a product of the confluence of exogenous and local cosmologies. Such "folk" developments are rarely static and can be subject to reform or localisation, a self-identifying indigenisation with the potential to remove notional otherness and create ownership of syncretic variations or even world religions, a theory further explored by Eaton (Clack 2005; Roy 1983: 249-252).

A utilitarian three-phase model of Islamisation was developed by Richard Eaton in his 1993 book *The Rise of Islam and the Bengal Frontier, 1204–1760* (Insoll 2017: 247). Prefacing his personal theory, Eaton discussed and critiqued a multitude of hypothesised Islamising mechanisms for Bengal with the associated historiography, including the work of the 19th century British surgeon James Wise (Eaton 1993: 122). Wise wholly rejected any "Immigration theory", but did not rule out the impact of colonial activity by Arabian merchants (Eaton 1993: 122-123). Three other impetuses for Islamisation discussed by Wise included "religion of the sword" or conquest, "religion of patronage" wherein individuals sought conversion to improve social conditions, or the similarly conceptualised "social liberation" which saw "lower" castes converting to escape the rigidity of the system (Carvajal 2013: 110; Eaton 1993: 123). Eaton sought to craft a model grounded in historical reality, free of the ever-present guiding biases of previous studies (1993: 128). The first phase of the Eaton model is "inclusion" wherein the Islamic divinities are accepted into the Bengali cosmologies (1993: 269). The following phase, "identification", sees a melding of Islamic and Bengali "superhuman agencies" as well as socio-cultural identities (Eaton 1993: 269; Peacock 2017: 9). The final stage sees the "displacement" of the Bengali pantheon with an Islamic one following 19th-20th century reform movements (Eaton 1993: 281-282). While developed in response to his investigation of a specific region, Bengal, the core of his theory has been successfully applied in Sub-Saharan

Africa, as it "allows for gradual religious change and… assimilation of older elements within the process as well" (Insoll 2003: 29).

An ambitious exploration of Islamic expression on the African continent from its inception to the modern-day, titled *The History of Islam in Africa* and edited by Nehemia Levtzion and Randall L. Pouwels, was released in 2000. While this collection contained the work of some 25 historians, conceptual approaches to Islamisation were somewhat homogenous throughout, often restricting its application to a synonym for conversion and/or adherence to loosely defined Islamic socio-political structures, with notable exceptions such as René Bravmann's (2000: 491) material examination (Levtzion and Pouwels 2000: 3, 17). However, the collection did emphasis the variety of regionally specific delivery mechanisms, propagation patterns, and realisations of Islam on the continent and included paralleling phenomena, namely Arabisation, vernacularisation, and syncretic practice (Levtzion and Pouwels 2000). Broadly, the collection argued for a three-staged Islamisation model for its Sub-Saharan African case regions, those being acceptance of "Islamic culture and practice", "formal conversion" (Haynes 2001: 700), and embrace of Islamic jurisprudence and the Five Pillars (Levtzion and Pouwels 2000).

Archaeological campaigns by Mark Horton on coastal East African sites, notably at Shanga and on Zanzibar, while not implicitly testing for Islamisation at the time, produced evidence for the indigenisation of Islam on the coast in the *longue durée*, notably through architectural and ceramic continuity (1996b; Horton and Middleton 2000). He built upon these studies significantly with several follow-up investigations, including endeavours to identify potential early sectarian influence along the coast (Horton 2013). Later collaborative reviews of regional scholarship with John Middleton would summarily affirm his hypotheses with work from throughout the littoral while elaborating on potential sectarian affiliations of early converts and the mechanisms by which the religion arrived, namely the "slow percolation of individual [Muslim] sailors and merchants" (Sheriff 2002: 317) into coastal societies (Horton and Middleton 2000).

Timothy Insoll investigated Islamisation in the Gao Region of Mali, beginning around the same time as the release of Eaton's influential monograph. Material markers for Islamisation were central to the establishment of chronologies in this study, the strongest of which was the presence of mosques, with burial orientation, dietary changes, religious symbolism, and domestic spatial utilisation also serving as crucial data (Insoll 1996). Insoll uses such archaeological evidence to argue for localised phased Islamic conversion in the Western Sahel, beginning with nomads and eventually included more sedentary communities (1996: 95-96; 2017: 260). However, another of Insoll's ongoing studies, the Becoming Muslim Project, which began in 2013, has revealed that the Malian hypothesis was not a universal African trajectory. Historical accounts and recent excavations seem to indicate that some Muslim communities in Ethiopia and the Horn of Africa were principally exposed to Islam via *jihad* and merchant interactions focused on urban centres, and then disseminated to rural populations (Insoll 2017: 260; Insoll, *et al.* 2017: 37). These studies clearly show that Islamisation mechanisms and outcomes in Sub-Saharan Africa were localised and varied.

The 2017 *Islamisation: Comparative Perspectives from History*, a compendium of historiography and regional theory, edited by Peacock, provides perhaps the most complete examination of the topic to date (Section 1.E.*II*).

2.B.*IV*. Summary

As discussed in Section 1.C, this thesis seeks to better understand the lifeways of the Mozambique Channel around the start of the second millennium through the examination of material remains, particularly those of coastal settlements with connections to Indian Ocean world. Previous archaeological thought belonging to the field of Islamic Archaeology, briefly introduced above, provided the methodological framework from which this research expands. That said, to fully position this thesis conceptually it is prudent that the literature for key Mozambique Channel sites is explored prior to the analysis of archaeological material from the case study locales (Chapter 4).

2.C. Studies within Mozambique Focusing on Early Islamic Coastal Sites

2.C.*I.* Introduction

Mozambique has been remarkably under-researched archaeologically with investigations being sporadic at best over the past 50 years (Torres, *et al*. 2016: 58). While there is historical evidence of colonial Portuguese interest in the ancient civilisations of East Africa, for artefacts of African origin were sought out and said to have been given as gifts to nobility and even the Vatican in the 16th century, not much is known of the methods by which these materials were obtained (Morais 1987: 39). Conversely, the European colonists who came to inhabit the coast developed an active aversion to the notion that any substantial pre-contact civilisation existed. Under a decidedly Eurocentric colonial administration, the histories of pre-Portuguese Mozambican habitation were purposely neglected in favour of a colonial focus, a policy which manifested in the removal of African prehistory from public education until 1975 (Morais 1987: 38, 123). Disregard of local history by the colonial government resulted in early 20th century research primarily being conducted by foreign scholars, including Carl Wiese's 1907 survey of Chifumbaze and Heinrich Albert Wieschoff's excavation of Manica in 1930 (Morais 1987: 40).

Interest in cultural-ethnic identities and characteristics increased in the 1930s as "Anthropological Missions in Mozambique" began (Madiquida 2007: 33). These missions were quintessentially a series of colonial studies examining the comparative biology of races through the guise of physical anthropology, later likened to pseudo-science conducted within Germany and the United States around the same time (Morais 1987: 41). However, a byproduct of these missions was the production of some of the first studies on the precolonial history of Mozambique, Correia's 1934 piece, and J. R. Dos Santos Júnior's 1941 history, in particular (Morais 1987: 41). The year 1943 saw the establishment of the *Comissão dos Monumentos e Relíquias Históricas de Moçambique*, a colonial office which sought to record archaeological resources for the sake of tourism, with the mission statement of acting "as testimony for the veneration of past generations to colonists" (Morais 1984: 113; 1987: 40). As was the case with neighbouring African states, remains of early hominids and stone-age man, a term generally referring to periods before the 7th millennia BC in Sub-Saharan African contexts, were often the focus of the research conducted within Mozambique at this time. The *Comissão dos Monumentos* promoted archaeological enquiry within Mozambique for the next three decades, supporting the work of researchers contributing to a Eurocentric historical model, similar to coeval colonial heritage bodies elsewhere in East Africa (Duarte 1993: 70; Wynne-Jones Fleisher 2015). Much of the work on the Mozambican coast produced in this period was never published (Duarte 1993: 70). However, relatively poor funding, focus, and organisation meant foreigner-dominated research persisted until the exit of the Portuguese from Mozambique in 1975 (Morais 1987).

For the sake of this study, Mozambique will be considered in two parts, with the Zambesi River acting as the north/south boundary. Southern Mozambique has been the subject of archaeological investigations for much longer than the north, especially in the hinterlands. The 20th century focus on the hinterlands was initially a consequence of academic research expanding out from the South African and Great Zimbabwe cultural complexes. These regions south of the Zambesi were generally less hostile to the Portuguese in the early colonial period, a trend that apparently perpetuated as late as the Mozambique War of Independence (Newitt 1995). Therefore, it can be argued that the research being conducted at the time was undeniably biased by colonial interests. The southern littoral would not begin to receive the same degree of systematic survey by archaeologists seen in the hinterlands and the Transvaal region until the late 1960s, except for short campaigns conducted and briefly described by Van Riet Lowe and Wells near the Limpopo River mouth in 1943 (Morais 1987: 75). However, this work did not result in a swell of interest in the region. Perhaps the most significant early report on cultural heritage within the southern littoral was Dias's unpublished study of the stone-age cave site of Caimane, a locale that was the focus of repeated scrutiny in the 20th century (Dias 1947). Work on the southern coast escalated in the late 1960s, when researchers such as Loreno Barradas, Derricourt, Martinez and Smolla began recording archaeological surface scatters during sporadic small-scale surveys, though these investigations were short-lived and the data produced was cursory (Morais 1987: 88).

The northern Mozambican coast was relatively untouched archaeologically until 1953 when J. R. Dos Santos Júnior investigated the region as part of a Portuguese colonial and anthropological mission (Madiquida 2007: 33). Dos Santos Júnior's studies led to the recording and excavation of the "Gomene walled enclosure," east of Pemba, Mozambique, the data form which remains unpublished (Duarte 1993: 70). Dos Santos Júnior put forth a hypothetical Zimbabwean connection for the site in later works, a supposition perpetuated by researchers into the 21st century, e.g. Madiquida (2007: 66; Santos Júnior 1973). A decade after archaeological excavations at Gomene ceased, Amaro Monteiro conducted preliminary surveys at M'buizi and Quisiva Island, as well as the Quiwia Peninsula (Cape Delgado), culminating in an excavation at the 18th century site of Tungi on the southern coast of Quiwia (Madiquida 2007: 34). Monteiro's campaigns provided important early descriptions of the islands and their cultural resources. However, little of his excavation data from Tungi is available, as it was mostly never published (Duarte 1993: 77). In 1970, Pierre Vérin carried out his own investigation of Matemo and Quisiva, in addition to Angoche, Cabaceira, and Sofala (Vérin 1970). Vérin attempted to directly connect Mozambican coastal Islamic sites with those of Kilwa and northern Madagascar, which would ultimately correlate with his future work in the Comoros (Vérin 1970). He found some success, or in Vérin's own words, "[points in common]," but the work was preliminary (Duarte 1993: 53). Vérin's objective of identifying tangible residue of links between coastal Mozambique, southern Tanzania, and Madagascar was the precursor to later 20th to early-21st century research by Duarte, Sinclair, and Torres, who sought to establish Mozambique within either a southern Austronesian and/or northern Swahili economic/cultural sphere (Sinclair, *et al.* 2012). At the close of the 1960s, Dickinson led a series of expeditions into the Sofala region, a term typically describing the lands south of the Zambesi, looking for the precolonial "Sofala," but was unsuccessful in this endeavour (Morais 1987: 41). Eventually the political upheaval of the late 1960s-early 1970s brought field studies in Mozambique to a standstill, as such work became nearly impossible.

Archaeological research resumed within Mozambique following the termination of Portuguese colonial rule in 1975. Tereza Cruz e Silva and Paul Sinclair began conducting archaeological excavations all along the Mozambican coast including Ibo

Island, and famously, Chibuene (Madiquida 2007: 34). Chibuene is the subject of investigation to this day and has been argued by Sinclair and others to be a pivotal port of entry into the African interior, signified by the abundant collection of Zhizo series beads recovered from the site (Sinclair, *et al.* 2012: 728). However, Sinclair's arguments for Chibuene's central commercial role were partially developed from now disproven assumptions that stone architecture was crucial to transoceanic trade, and goods accessibility, a correlation refuted by the work of Fleisher and LaViolette (Wynne-Jones and Fleisher 2015b). Much work remains to be done at Chibuene to properly assess its role in the region. Paul Sinclair would go on to define the regional ceramic typologies of the Lumbo and Sancul traditions, series which are routinely used today (Sinclair 1985). Contemporaneous research included Peter Garlake and Graeme Barker's excavations of Manyikeni in 1975 and 1976, work inspired by a published photographic collection produced by Barradas who dubiously associated the site with Atlantis and Lusitania (Barker 1978: 71; Garlake 1976: 25). The findings of these efforts would ultimately extend the frontiers of Great Zimbabwe well beyond the central plateaus of the south African interior, and geographically position the chiefdom of Tonge, Gambe, whom the Portuguese missionary Fernandez recorded in 1560 (Garlake 1976: 95; Newitt 1995: 150).

The early-mid 1980s saw archaeological publications regarding Mozambique dominated by a handful of scholars including Leonardo Adamowicz, Ricardo Duarte, Gerhard Liesegang, João Morais, Sinclair, and Silva who shifted focus to more current social histories within southeastern Africa. Adamowicz conducted extensive surveys as part of a study on early farming communities throughout Mozambique, leading to the identification of more than 100 sites in the province of Nampula (Madiquida 2007: 17). Duarte was prolific in northern Mozambique at this time, leading thorough investigations at Somaná, Foz do Lúrio, and Gomene (Duarte 1993). Liesegang, who had previously excavated at "Sofala" in 1969, organised expeditions on the islands of Quirimba and Vamizi, as well as at Tungi (Madiquida 2007: 17; Sinclair 1982: 163).

The Mozambican Civil War escalated in the late 1980s and into the early 1990s, resulting in another cessation of archaeological activity in the interior and northern region where logistical issues were magnified by widespread violence and prolific utilisation of landmines (Newitt 1995: 573). Drought, famine, collapsing infrastructure, terror, and war amplified the already difficult scholarly environment of Mozambique, effectively grinding academia, and the government itself, to a standstill (Newitt 1995: 573). Duarte's study of early farming communities and Swahili centres was essentially the only archaeological research conducted in northern Mozambique in this period (Duarte 1993). This included material reevaluations of sites in Northern Mozambique, such as Ibo, Gomene, and Quisiva (Duarte 1993). Duarte's 1993 work *Northern Mozambique in the Swahili World: An Archaeological Approach* relied heavily on Sinclair's Lumbo and Sancul ceramic typologies to date archaeological strata. However, these series were produced primarily through relative dating techniques and lack strong chronological markers (Torres, *et al*. 2016: 64). These concerns aside, Duarte's studies on the northern Mozambique coast at the end of the 1980s would prove crucial to subsequent work conducted in the region. The multi-party elections of 1994 signalled the end of the Mozambican Civil War and intensive archaeological research returned to the country's north. Archaeologists were able to renew their work, and they did so with varying degrees of enthusiasm, for some had shifted their investigations to the southern provinces of Mozambique, such as Chibuene and Sofala, where access to cultural resources had fewer safety and logistical concerns (Madiquida 2007). Paula Meneses and Duarte excavated at Ilha de Moçambique in the mid-1990s uncovering Kilwa Wealed ware, tangible evidence of precolonial ties to the northern Swahili, strengthening historical records and oral narratives (Duarte and Meneses 1996: 558; Freeman-Grenville 1975: 130; Newitt 1995: 190). However, the nature of these connections are still being investigated to this day (Torres, *et al*. 2016). Research gradually shifted to the hinterlands in the 1990s as infrastructure was replenished, splitting the scant academic base within the region.

Academic enquiry in southern Mozambique in the early 21st century has been diverse, varying from intensified studies of stone-age and early humans/hominins to continued investigations at sites like Chibuene by Ekblom, Sinclair, and Wood, all researchers out of Uppsala University, Sweden. A thread of connectivity exists between much of the non-stone-age research, however. Ekblom, Sinclair, and Wood continue to develop a material argument for Chibuene's role in inland goods acquisition and distribution, while investigations by Shadreck Chirikure utilised material evidence to elaborate on the agency possessed by communities at sites like K2, Mapungubwe, and Schroda in this regional, and ultimately transoceanic, trade network (Chirikure 2014; Wood 2012). Reconstructing caravan and riverine trade routes in the southern African interior has the potential to significantly inform on settlement patterns and communities on the Mozambican coast, including those in the north. Current scholarly opinion is that archaeological assemblages and proximity indicate that Mozambican coastal communities acted as ports of entry and transport hubs for the valuable inland goods (Chirikure 2014; Sinclair, *et al.* 2012). However, a great deal of research remains to be done before this interior network can be accurately linked to coastal communities in the north.

A revitalisation of archaeological interest into northern Mozambique has occurred over the past three decades, a result of investments by Uppsala University and its "Urban Origins in Eastern and Southern Africa Project," which supported East African graduate-level students in their research (Wynne-Jones and Fleisher 2015$_b$). Hilário Madiquida's late 1990s/early 2000s research on the iron-using communities of Cape Delgado was one such study. Madiquida's investigation was principally exploratory, summarising previous research in the region, evaluated potential inter-site connections, and attempted to bring forth new understandings of historic Swahili and non-Swahili communities in northern Mozambique (Madiquida 2007). This included excavations at the stone town ruins of Quissanga Beach, west of Quirimba Island. Madiquida has argued that the data displays complex social stratification within a precolonial Swahili settlement, a theory which has been applied to some northern sites (2007: 84). Ultimately, Madiquida's gravitation towards established sites prevented him from locating pre-AD 1000 material, or that of early iron-using communities that he had desired to find at the onset of his research (2007: 108). While scholarly discussion regarding much of the Swahili Coast has progressed from purely descriptive to interpretive and theoretical, Mozambique, particularly the northern coast, lacks the requisite interpretive baseline to be included in most of these discussions (Wynne-Jones 2016: 131).

Archaeological inquiries in the Quirimbas Archipelago have thus far been focused on locations mentioned in 16th century Portuguese sources and have been predominately of an exploratory nature, largely survey and shallow probing pits, with the notable exception being a collaborative study by a team from the Complutense University of Madrid, Eduardo Mondlane University, and the British Museum (Torres, *et al*. 2016: 58). While this group had planned on expanding their archaeological campaign following two initial field seasons, their research has thus far been limited to “core” islands within the archipelago, specifically Ibo, Matemo, and Quirimba (Torres, *et al*. 2016). Investigations thus far have concentrated on establishing the Quirimbas’s place within the greater Swahili world and unraveling their ties to hinterland communities. Islamic material identity within the Quirimbas remains unstudied.

The following sections group known archaeological sites in Mozambique based on the date ranges of their earliest contexts. Singular case sites are examined for each approximate chronology. It is essential that the time frames presented in this historiographic review are not understood as self-contained, since communities, settlements, lifeways, trade networks, material forms, *et cetera*, demonstrably continued, adapted, and flourished beyond their origin points. The sites most relevant to the Islamisation of the Mozambique Channel are discussed. Therefore, the following does not represent all Mozambican sites for each range.

2.C.*II.* Archaeological Studies on Mozambican Sites 500-1000 AD

Known archaeological sites from early iron-using communities in Mozambique are few. The paucity of material from 500-1000 has translated into a relatively poor understanding of the development of farming, and subsequent growth of trading centres on the Mozambique littoral (Madiquida 2007: 13). Nevertheless, investigations at known sites have provided insights into aspects of mid-first millennium life, including consumption patterns and group ethnicity, based on ethnographic and historical data related to foodways (Ekblom 2012). Adamowicz’s surveys in the early 1980s documented archaeobotanical evidence of sorghum (*Sorghum bicolor*) farming from a 7th century assemblage in the Mozambican province of Nampula (Adamowicz 1987). This specific species of sorghum is thought to have been originally domesticated along the southern Nile or Ethiopian highlands as early as 1000 BC, from which its cultivation spread gradually across the continent

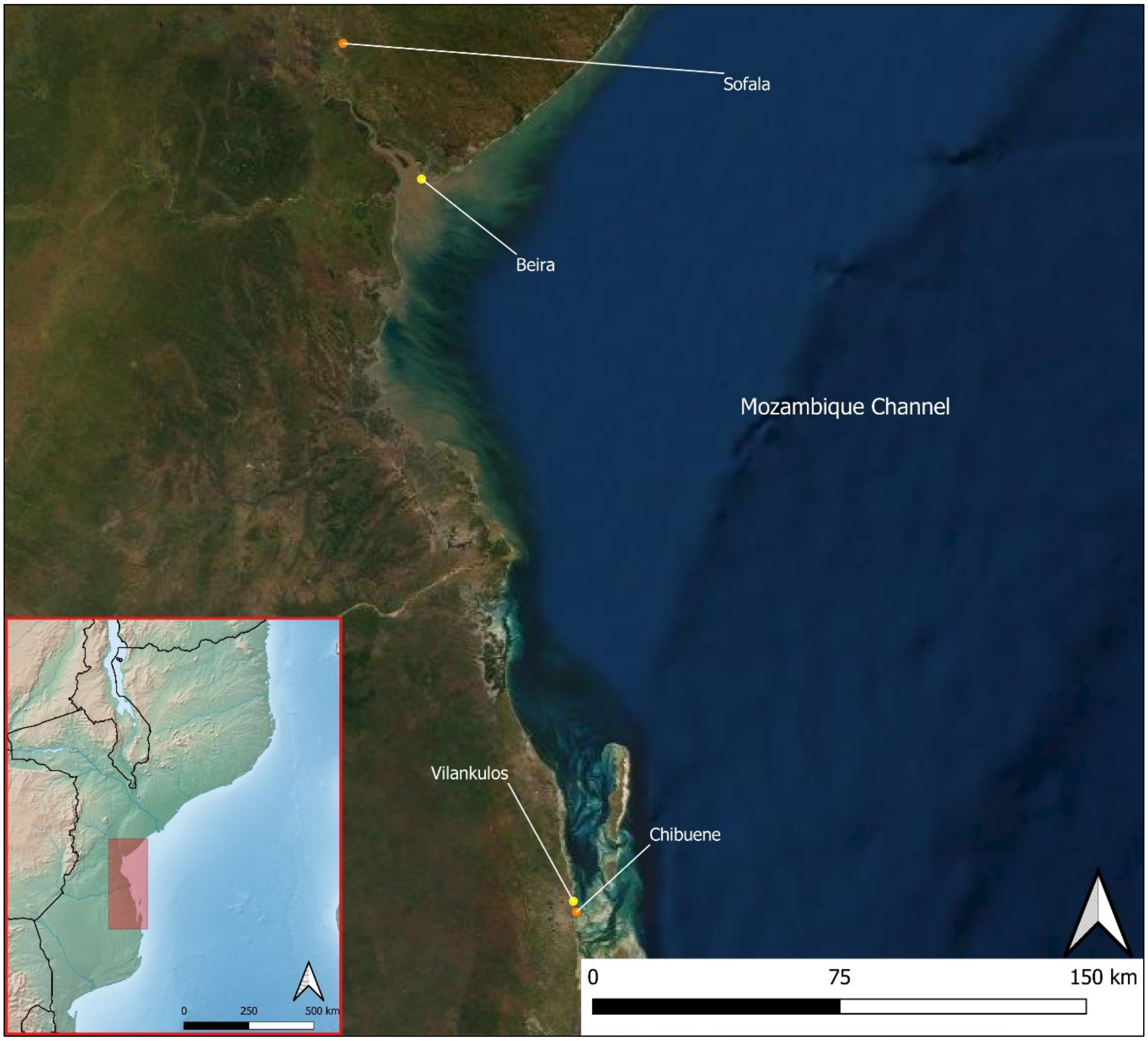


Figure 2.1: Select Mozambican archaeological sites dating to 500-1000 AD. Modern towns in yellow.

(Hall 1990: 72; Taylor 2004). Sorghum farming, and all Sub-Saharan African agriculture for that matter, has been tied to the expansion of Bantu languages from the modern Nigeria/Cameroon border region to the southeastern reaches of the continent (Russel, Silva, and Steele 2014: 1; Taylor 2004). The communities who came to inhabit northern Mozambique have been associated with the “deep split” or “Eastern Stream” migration of Bantu-speaking peoples, a hypothesis under intensifying scrutiny as data-driven theories increasingly recommend a later “pathway through the rainforest” model (Newman 1995; Russell, Silva, and Steele 2014: 2). However, neither model has been confidently applied to Mozambique, due to a lack of research and usable data, primarily confident radiocarbon context associations (Russell, Silva, and Steele 2014: 7). All models generally agree on an approximate mid-first millennium arrival of Bantu-speaking people in southeastern Africa, taking a riverine route along the Zambesi, then dispersing along the coast, making Adamowicz's 7th century Nampula farming sites significant (Russell, Silva, and Steele 2014: 7). This is archaeologically traceable, in part, through the appearance of the Matola ceramic tradition in the region (Kohtamäki and Badenhorst 2017: 81, 88). Early iron-using communities in northern Mozambique were severely limited in where they could be agriculturally active, given the relatively low rainfall of the region and its drought-prone climate, which might explain the relative late appearance of permanent settlements in Nampula and Cabo Delgado provinces (Adamowicz 1987; Madiquida 2007: 16). This, however, assumes that the highlighted regional attributes of historically recorded climate can be projected into the past.

Artefacts found at southern Mozambican sites, specifically: "Sofala" and Chibuene recommend pre-AD 1000 participation in Indian Ocean trade in a region typically thought of as disconnected from monsoon exchanges (Newitt 1995: 8). The mechanisms which enabled this region to engage in these networks are not completely known, due in large part to the archaeological invisibility of relevant material indicators, specifically organic-based construction such as: ropes, boats, *et cetera*, but it is likely that a combination of riverine and near-coastal, ocean-based trade was widespread (Madiquida 2007: 15). Material evidence, however, makes it apparent that these locales were inhabited for extended periods, beginning in the mid-first millennium, and were receiving goods from ocean-based trade networks (Sinclair, *et al.* 2012: 723). The sites of Chongoene, Matola, and Xai-Xai, all located in southern Mozambique, contained rich archaeological assemblages including considerable shell middens, byproducts of raw material processing for trade purposes, but were abandoned *circa* the 5th century, and are therefore outside of this study's scope (Duarte 1993: 80). Pottery belonging to the Matola tradition, approximately dating to the 3rd century BC through the 7th century AD, function as index artefacts for Early Iron Age Bantu communities in southern Africa (Kohtamäki and Badenhorst 2017: 81, 88). The Matola series, which is roughly comparable to the Kwale typology of the northern East African coast, has been identified at sites from KwaZulu-Natal to southern Tanzania indicative of an expanding, but culturally interconnected region (Kohtamäki and Badenhorst 2017: 81, 89; Kwekason 2013: 164). Despite predating the Islamic period of eastern Africa by many centuries, the existence of these Early Iron Age sites is important to note as they evidence a shared cultural sphere, with distinct technological traditions, participating in community industry for the purpose of regional trade, long before the urban ocean-facing towns of the early second millennium. Thus, it should not be assumed that farming groups and/or early iron-using communities were separate from the developing complex commercial networks observed elsewhere on the East African coast, even in the period preceding that which is examined within this thesis.

2.C.*II*.a. Chibuene (Lat. 22˚02'00" S ; Long. 35˚19'30" E)

Chibuene is a coastal, multi-component site, representing a seasonal trading post, often discussed with a satellite site on the shore of Lake Nhaucati, located south of Vilankulos Bay (Figures 2.1 and 2.2) (Horton 1987: 93; Sinclair, *et al.* 2012: 723). The earliest archaeological stratum, designated "Layer 300", at Chibuene contains evidence for oceanic and inland connections between coastal communities as early as the 7th century, inferred from imported ceramics and radiocarbon dating (Wood 2012; Wood, Dussubieux, and Robertshaw 2012: 60). Late Stone-Age lithic finds on Bazaruto Island, less than 50 km north of Chibuene, strongly recommend first-century occupation of the coast (Ekblom 2008: 1248; 2012: 480). However, no stone-age artefacts have been located within the boundaries of Chibuene.

Material peculiarities at Chibuene, specifically vessel glass not found within contemporaneous loci in the interior as well as sundry ceramics, potentially indicate that a diverse population, not simply definable as proto-Swahili, was present in the past (Wood, Dussubieux, and Robertshaw 2012: 72; Wynne-Jones 2016: 130). This seemingly corroborates al-Idrīsī's 12th century description of cosmopolitan ports near Sofala in *Nuzhat al-mushtāq fī ikhtirāq al-āfāq* (Freeman-Grenville 1975: 19; Jaubert 1836: 65-67; Wood, Dussubieux, and Robertshaw 2012: 72). Investigators have argued that the pottery produced at the site has attributes typical of both the eastern coastal region and the South African interior (Wynne-Jones 2016: 130). Sinclair likened portions of the local ceramics to the ubiquitous TIW series, reminiscent of

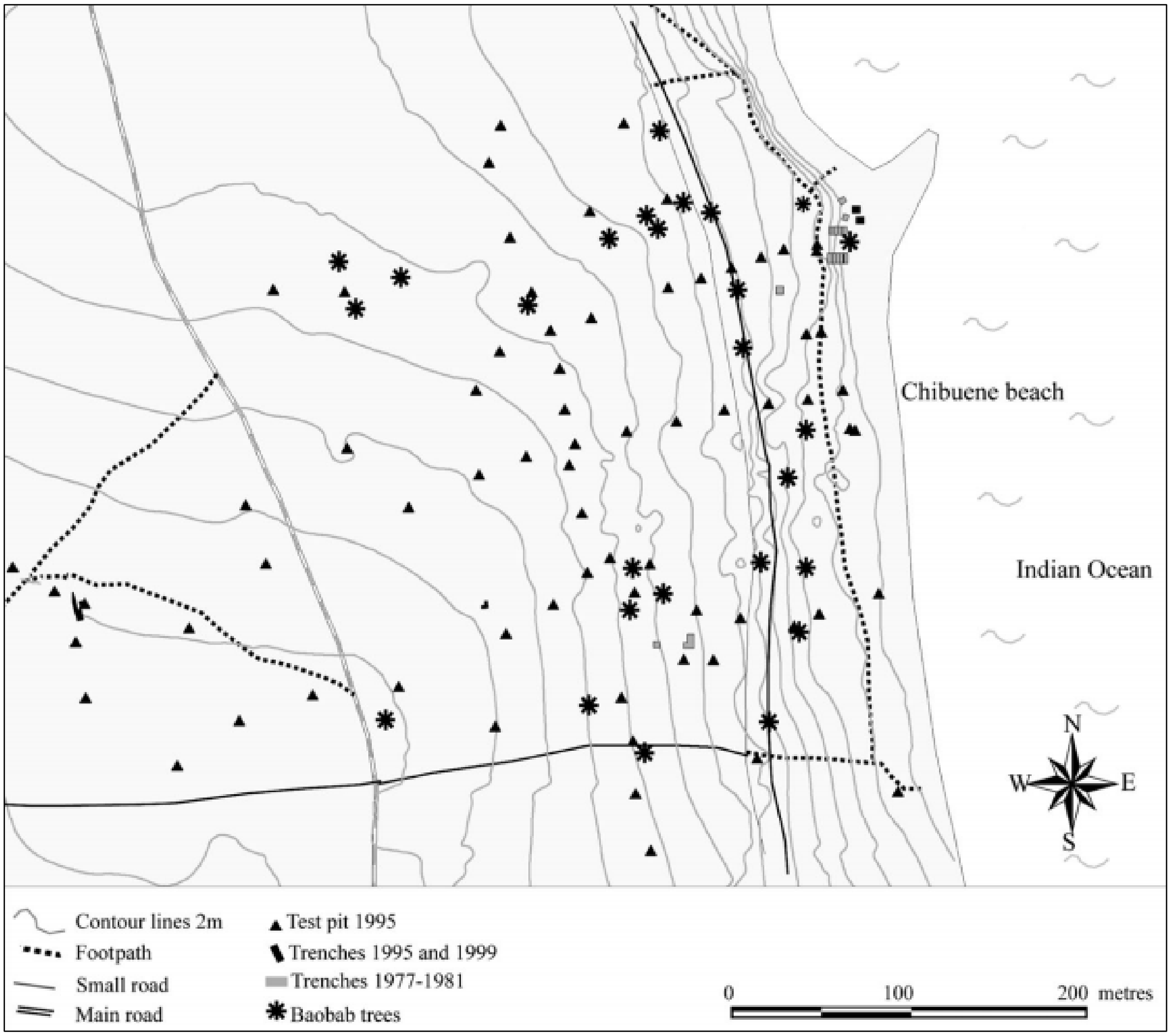


Figure 2.2: Site Map of Chibuene, Sinclair, Ekblom, and Wood 2012: 727.

finds within early contexts (Period IA) at Kilwa Kisiwani and Manda (Periods I and II) (Sinclair 1982: 153; Wood, Dussubieux, and Robertshaw 2012: 60). Other ceramics within these early contexts have been confidently associated with Matola and the "Gokomere/Ziwa" tradition (Badenhorst, *et al.* 2011: 5; Sinclair, *et al.* 2012: 727). Gokomere Rock Shelter is an Iron Age, referring to the 2nd-10th centuries in most Sub-Saharan African contexts, Zimbabwean site, outside of Masvingo (Fort Victoria), dated to roughly the 5th-7th centuries, where evidence of iron production is present in the earliest contexts (Phillipson 1981: 680; Vogel 1978: 14). It is possible that Chibuene had traders from the interior residing alongside, and possibly intermarrying with, coastal populations. Anneli Ekblom (2012: 480) has described post-1200 Chibuene, following a 200-year occupational hiatus, as maintaining connections to interior populations in a manner similar to a vassal-like entity and "under the influence" of Manyikeni, a nearby Great Zimbabwean outpost. This relationship, however, is difficult to prove convincingly through archaeological remains, especially in the absence of historical records (Badenhorst, *et al.* 2011: 5; Wood, Dussubieux, and Robertshaw 2012: 60, 71). The ceramic assemblage at Chibuene demonstrates prolonged participation in Indian Ocean trade, possibly pre-dating Islam, with examples including Song glazed wares, white and blue splashed wares, green-glazed wares and eggshell-glazed wares from Sohar, Oman (Duarte 1993: 48; Sinclair 1982: 152; Wood, Dussubieux, and Robertshaw 2012: 60).

Zhizo beads have been recovered in large quantities at Chibuene, from a relatively small area (175m^2 investigated of an estimated 300,000m^2), potentially positioning the southern Mozambican coast at the centre of a massive trading network from an early period (Wood, Dussubieux, and Robertshaw 2012: 60; Wynne-Jones 2016: 130). The Zhizo typology is characterised by chopped, drawn tubes with untreated edges, made of plant ash-based glass, isotopically similar to Middle Eastern productions (Sinclair, *et al.* 2012: 728; Wynne-Jones 2016: 130). Interior African sites such as Makuru, south-central Zimbabwe, and Schroda in the Limpopo Valley have archaeological assemblages containing Zhizo type beads, which are thought to have arrived via riverine and terrestrial routes from Chibuene (Chirikure 2014). Chibuene is not the only East African coastal site to contain Zhizo beads, samples have been recovered from early strata at both Shanga and Tumbe, albeit in lesser quantities (Wood, Dussubieux, and Robertshaw 2012: 71; Wynne-Jones 2016: 130). Sinclair argues that the differential quantities of Zhizo beads recovered along the coast could be evidence that Chibuene had exclusive access to this product from oceanic merchants (Sinclair, *et al.* 2012: 734). However, it is possible that the Zhizo style was in demand in the South African interior, but not along the coasts, mirroring the relative distribution of vessel glass and imported ceramics between the regions, which would explain why Chibuene was so rich in these beads compared to its northern contemporaries (Wood 2015: 14).

Later phases, Layers 100 and 200, at Chibuene are composed almost entirely of shell, possibly the material manifestation of a localised transition from trading hub to a fishing-based subsistence economy (Badenhorst, *et al.* 2011: 7; Sinclair 1982:

152). Analysis of shell middens at Chibuene, some of which exceed three metres in height, indicate that shellfish were the “bulk of the protein diet” of the inhabitants in the later phase of occupation (Badenhorst, *et al.* 2011: 11). A significant portion of shells recovered were those of pearl oysters, recommending some continued involvement in transoceanic trade, specifically with India and the Middle East, as pearls “played no role in coastal societies of South Africa” (Badenhorst, *et al.* 2011: 11). Such evidence for exploitation of oysters corroborates historical accounts of pearl trade in the region, specifically regarding the nearby fishing communities of Bazaruto, settlements mentioned in the 1609 text *Etiōpia Oriental e Vária Histōria de Cousas Notáveis do Oriente* by João dos Santos (Morais 1987: 86).

One 9th century burial at Chibuene is possibly Islamic, indicated by the individual’s position on their right shoulder facing north, which could represent one of the earliest of its kind on the East African coast (Badenhorst, *et al.* 2011: 6; Insoll 2003: 167; Sinclair 1987: 87). The presence of Muslims in southern Mozambique, far outside of classically understood monsoon trade lanes would be significant. However, there is no universal agreement surrounding these burials and their dates. Further investigation at Chibuene is necessary.

2.C.*III.* Archaeological Studies on Mozambican Sites 1000-1500 AD

Archaeological investigations within Mozambique have so far primarily located sites dating to the first half of the second millennium, reflecting the relative absence of research into the region. There is little doubt that Mozambique was widely inhabited by farming communities and agriculturalists prior to the 11th century. However, the material record of this period is scarce, possibly due to the relative archaeological invisibility of peoples utilising mainly organic materials, or the continuity of occupation in the region masking and potentially destroying the fragile remains of previous generations (Duarte and Meneses 1996: 555; Madiquida 2007: 15). Whatever the reason, be it research preference, preservation bias, *et cetera*, sites containing contexts dating between 1000-1500 are better represented in the archaeological corpus of Mozambique.

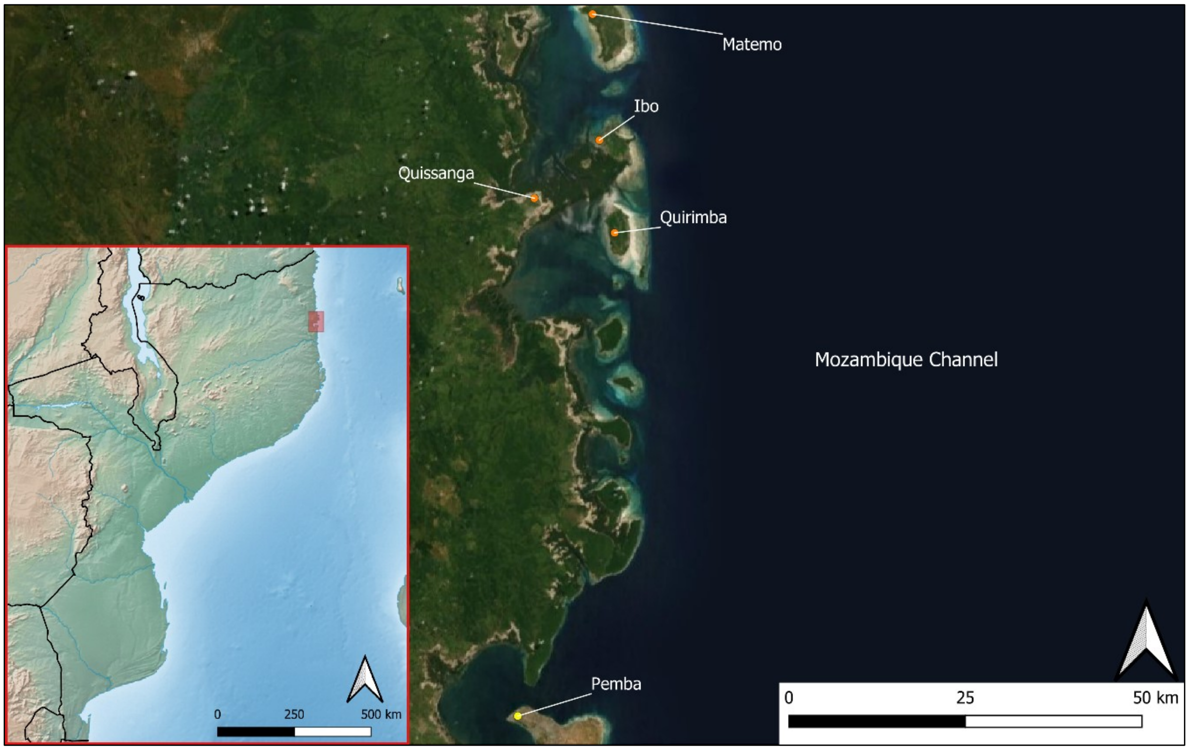


Figure 2.3: Select Mozambican archaeological sites dating to 1000-1500 AD.

The Urban centres of the Mozambican littoral developed rapidly after their late 9th/early 10th century inceptions, mirroring some northern Swahili counterparts (Duarte and Meneses 1996: 555). The density of these settlements remains a mystery, but the past three decades of concerted effort by a handful of archaeologists has been steadily clarifying the nature of post-10th century coastal life. Recent research in the region has shown that communities in this period were not solely engaged with the Indian Ocean. Some were looking west at the rising power of Great Zimbabwe and prosperous Iron Age communities in the south African interior (Morais 1987). Archaeological understanding of Islamic settlements in Mozambique in the centuries leading up to the arrival of the Portuguese is poor, and thus the historiography presented in this thesis has been crafted on what little data is available. Material remains from Matemo Island, discussed below, will serve as representative case study, but should not be seen as depicting the entire diversity of settlements within southeastern Africa (Figure 2.3). It must be emphasised that settlements in coastal Mozambique during the early-second millennium were certainly composed of heterogenous populations, some of which were Islamised.

2.C.*III*.a. Matemo Island (Lat. 12˚11'56" S ; Long. 40˚33'54" E)

Eight kilometres north of Ibo is Matemo Island, also known as Matemwe (Figure 2.3). The island once housed a prosperous Swahili town, which, according to a 17th century account by João dos Santos, was a fortified settlement built of coral/coralline limestone (Madiquida 2007: 63). Historical sources speak of the *Maluane* textiles produced by this community, which were widely distributed on the African mainland (Torres, *et al*. 2016: 58). João dos Santos recorded the razing of the village in 1592 during a Portuguese punitive mission in the region (Torres, *et al*. 2016: 58). Matemo is still inhabited, and the ruins of Portuguese colonial buildings, including a 19th century wattle-and-daub structure utilised by European slavers, are visible in the south of the island (Madiquida 2007: 64). Modern researchers have associated ruins in the northwestern part of the island with the destroyed precolonial Swahili settlement (Madiquida 2007: 62; Torres, *et al*. 2016: 61). These ruins include a mosque, complete with a *minbar* and *miḥrāb*, at least two coral rag structures, and a cemetery connected by considerable ambient surface debris of ceramic sherds and marine shells (Figure 2.4) (Madiquida 2007: 62; Torres, *et al*. 2016: 62). There are likely more architectural remains associated with this locale, but much of the island is inhibitively vegetated, limiting navigation and surface visibility (Torres, *et al*. 2016: 62). In the late 1990s, Madiquida conducted a non-invasive investigation of the site, and noted Sancul series ceramics, East Asian imports including blue-and-white porcelain from the 18th-19th centuries, beads of Arabian and European origins, as well as other artefacts which recommend that the settlement was active in transoceanic trade in the early-second millennium (Madiquida 2007: 63). Sancul pottery has been compared to finds from the 1697 Santa Antonio de Tana shipwreck in Mombasa (Duarte 1993: 61). Surface finds within the northwestern ruins of the island are homogenous to that of nearby Ibo Island (Torres, *et al*. 2016: 61). Madiquida recommended a 13th-14th century foundation date for Matemo, based on the ceramics he encountered, though this range has been questioned by the latest team to examine the site (2007: 63).

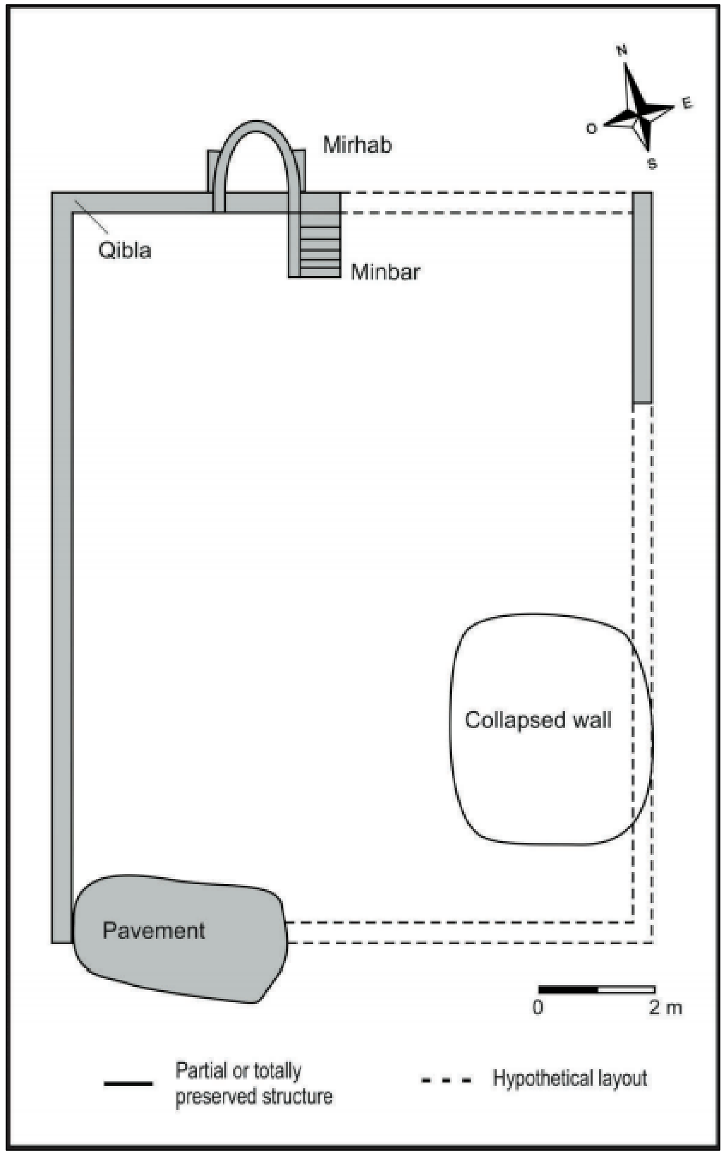


Figure 2.4: Matemo mosque plan, Torres, *et al*. 2016: 62.

A multi-institution team from the Complutense University of Madrid, Eduardo Mondlane University, and the British Museum investigating Matemo in 2015 as part of a larger project in the region that included excavations at Ibo and Quirimba islands. Their initial field season focused on reevaluation and ground truthing of previous records. During this expedition it was noted that the *miḥrāb* of a ruined mosque contained modern debris. Closer investigation made clear that following the cessation of the mosque's formal function, the local community began to make offerings (Torres, *et al*. 2016: 62). Offerings left at ancient graves associated with *sharif*, socially important individuals, and at mosque ruins has been observed at other Swahili sites to the north of the Quirimbas, e.g. Songo Mnara, as well as on Quirimba Island (Torres, *et al*. 2016: 63; Wynne-Jones and Fleisher 2015$_a$: 110). While documented, this practice of veneration/commemoration is not well understood, a consequence of the temporal, and often ethnic, disconnect between the modern inhabitants, and the communities of these early-mid-second millennium sites (Wynne-Jones and Fleisher 2015$_a$: 110, 117). Whether these offerings are evidence of syncretism in practice, i.e. ancestor veneration, power negotiation, *et cetera*, is not known as no proper archaeological excavations have been conducted at Matemo (Torres, *et al*. 2016: 62).

The author visited the mosque on Matemo Island in Spring 2018 (Anderson 2019). The structure was as described in the Torres, *et al*. 2016 apart from the *miḥrāb* which had been reduced to roughly half its previous height. A local elder claimed that a growing extremist movement in the region was to blame. This development could place more local cultural heritage at risk.

2.C.*IV*. Archaeological Studies on Mozambican Sites 1500-1800 AD

Historical records within the region increased drastically following the colonial conquest by the Portuguese, effectively beginning in the 15th century, consequently increasing the visibility of contemporaneous archaeological sites (Duarte 1993: 59; Newitt 1995). Written records serve as an invaluable tool for locating and understanding settlement dynamics in the late 15th/early 16th centuries because the Portuguese actively sought to document local connections (Newitt 1995). However, surviving Portuguese sources are few, and do not treat all settlements and coastal inhabitants equally (Castro 1969). Early European accounts make mention of a Swahili community unlike that to the north, i.e. not wholly contained within dense urban stone towns (Duarte 1993: 59). Communities that did not construct monumental stone architecture are rarely mentioned in historical documents and are thus “lost” until located materially (Castro 1969).

The archaeological understanding of 1500-1800 Mozambique has suffered from a lack of investigation. Material remains of this period, however, have the benefit of being chronologically closer to the present, enhancing the possibility of community knowledge of site locations, usage, and histories. Colonial period sites frequently have preserved standing architecture, which can alert researchers to the presence of subsurface archaeological remains from a greater distance than those sites which possess little to no surface presence. The visibility of these sites, however, has likely biased academic enquiry into the time period, as research gravitated towards the path of least resistance, i.e. sites with conspicuous material remains. This has been the case for much of the history of the profession globally.

With that in mind, a multi-component site not strictly built of monumental structures was chosen by the author as a case study for historiographic review.

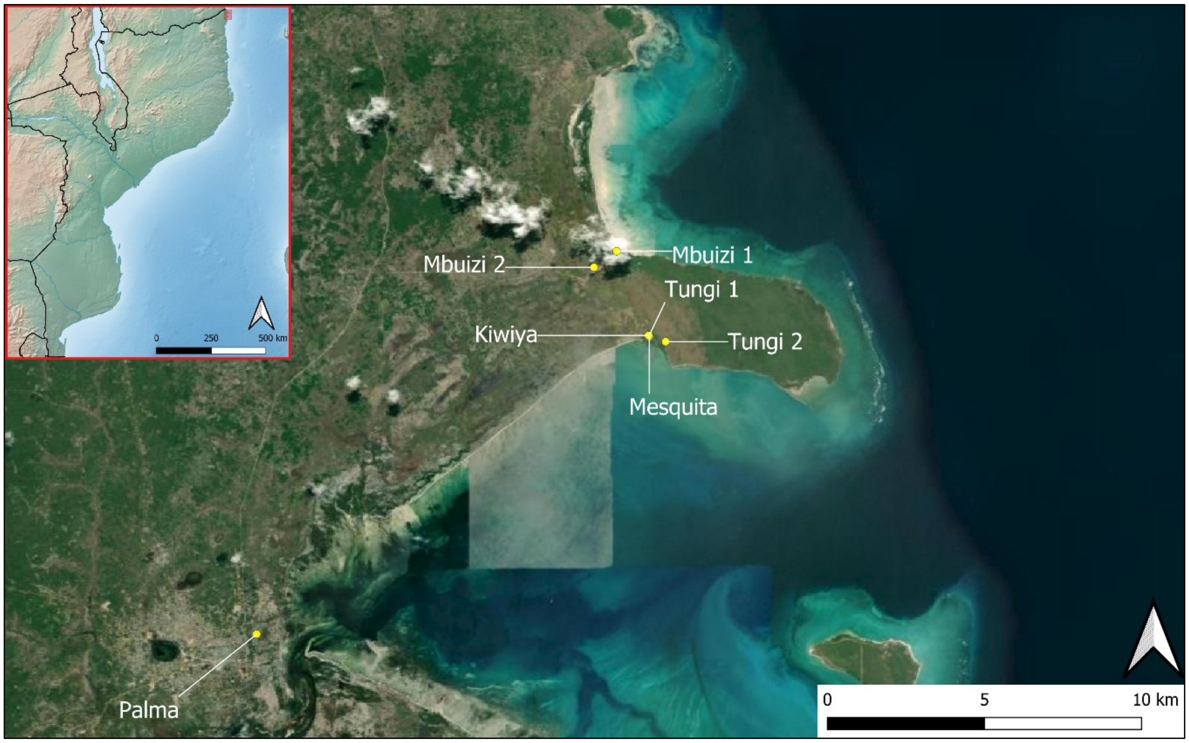


Figure 2.5: Select Mozambican archaeological sites on Cape Delgado.

The following sites contain material assemblages dating their initial period of habitation to 1500-1800 (Figure 2.5). While this period saw the arrival of Europeans *en masse* in much of southeastern Africa the Islamisation within the Mozambique Channel continued.

2.C.*IV*.a. Tungi and M'buizi (Lat. 10˚40' S ; Long. 40˚39' E)

Cape Delgado, and Tungi Bay to the south of the peninsula, were once the core territorial holding of the Tungi Sultanate, which rose to prominence as a player in the international slave trade, then declined into nonexistence by the end of the 19th century (Figure 2.5) (Adamowicz 2012: 12, 14; Bennet 1987). The history of the Tungi Sultanate is not well documented, with the foundation date mostly speculative at this juncture (Adamowicz 2012: 12). The sultanate is featured prominently in the Comorian Chronicles, in which Tungi was one of the initial settlements founded by the "Shirazi Brothers" of popular Swahili mythology (Adamowicz 2012: 13). Within the Comorian take on Swahili origins, the founding ruler of Kilwa, Sultan Ali, was perpetually at war with Tungi, suggesting that the settlements were at least contemporaneous (Adamowicz 2012: 12). However, this chronicle diverges considerably from most other accounts, and material evidence would suggest a more recent founding of the Tungi Sultanate. The oldest known written reference to Tungi is by Aḥmad ibn Mājid, whose 15th century travel-logs commented that natural anchorages in the bay were frequently used by mercantile vessels travelling to and from Vamizi Island (Adamowicz 2012: 14). Based on the lack of a settlement description within Ibn Mājid's text, it seems likely that settlements on Cape Delgado, and along the Tungi Bay, developed post 15th century as a response to the trade traffic in the area. European colonial sources do not mention the Tungi Sultanate until 1744, at which time they describe a territorial dispute between the Portuguese colonial government and the Sultanate of Zanzibar over who had ownership of Tungi, which at the time had a policy of "balanced double loyalty" (Adamowicz 2012: 13). This conflict was resolved when the German empire north of the Rovuma conceded Palma Province and Cape Delgado to the Portuguese colonies following the bombardment of Tungi by the naval ships *Afonso de Albuquerque* and *Douro* on 18th February 1887 (Bennet 1987: 16). However, in the interim, Tungi maintained a sizeable claim to coastal East Africa. A French commercial investigator, Edouard Loarer, in 1848 reports the then sultan of Tungi, Muḥammad bin Sulṭān (Section 4.B.*I*.c), held dominion "120 miles deep in the continent" "north of the Minangani river" (Rzewuski 1991: 209), referring to the present-day Palma/Tungi Bay (Bennet 1987).

Anthro-linguists argue for an early Swahili presence in both the Palma province and the modern village of Kiwiya, also known as Quiwia, based on the dialect of Kiswahili present in the region (Adamowicz 2012: 14). This is notable, since this northern province is the only part of Mozambique that speaks predominantly Kiswahili (Adamowicz 2012: 14). The archaeological record of Cape Delgado supports the linguistic hypotheses, as Swahili-style coral rag architecture was used at both Tungi and M'buizi on the western edge of the peninsula. The sites are believed to be contemporaneous, and part of the same Late Iron Age economic complex, composed of at least five distinct loci, Tungi 1 and 2, M'buizi 1 and 2, and *Mesquita* (Adamowicz 2012: 36). Architectural remains at Tungi and M'buizi, as well as artefacts associated with each cluster of ruins, are homogenous in type and typology. Evidence suggests that the roughly two-kilometre-diameter complex of archaeological ruins were a single entity denoting the administrative core of the Tungi Sultanate.

Figure 2.6: Tungi mosque exterior. April 2018.

Ruins in Tungi Bay were first reported archaeologically by Francois Balsan during a survey near the mouth of the Rovuma River in 1966, though no thorough recording occurred at this time (Duarte 1993: 77). An archaeological investigation of the peninsula began shortly after this report. Amaro Monteiro's 1966 campaign surveyed and excavated west of Kiwiya village, at Tungi and M'buizi (Duarte 1993: 77). Islamic Turquoise Glazed wares, likely from the late 14th century, were recovered during these excavations (Adamowicz 2012: 32). However, Monteiro did not record accurate artefact provenance, so little usable data was produced (Adamowicz 2012: 29). Liesegang reevaluated the site in 1988, never publishing his findings, but did share his data with Duarte for the latter's 1993 book on northern Mozambique (Duarte 1993: 77). Liesegang recorded two distinct loci of stone town ruins, constructed of coral-and-lime, a palace which had multiple reconstructions, two clusters of Swahili-style tombs, and two mosques (Figure 2.6) (Duarte 1993: 77). Imported finds reported at this time included 18th-19th century East Asian and French wares, specifically *Opaque de Serrigemmes*, from the close of the 19th century (Adamowicz 2012: 29; Duarte 1993: 77). Liesegang noted that the local ceramics were distinct from the Lumbo and Sancul series, likening them to Chittick's upper Kilwa sequence (Duarte 1993: 78). While these early endeavours drew attention to the archaeological potential of Cape Delgado, a published survey of the site would not be produced until Leonard Adamowicz, acting as a consultant ahead of a natural gas pipeline construction project, produced an archaeological impact assessment for the region, which itself was limited to surface finds (Adamowicz 2012: 36). Adamowicz recorded surface finds at both Tungi and M'buizi, primarily late Lumbo type pottery, imported ceramics, including East Asian, European, and Middle Eastern wares whose typologies were not specified, glass beads, and fragments of glass bottles (Adamowicz 2012: 37). Based on observations made during this brief resurvey of the cultural heritage of Cape Delgado, Adamowicz theorised that the region was initially settled in the 3rd-6th century, with occupational gaps until the 12th century, and experienced a significant population boom as a result of slave-trade participation in the 15th-18th centuries (Adamowicz 2012: 37). However, available data recommends a later occupational period for Tungi and M'buizi, and it is unclear how Adamowicz projected the occupation of the area to the early first millennium. Adamowicz concluded his archaeological assessment of the region by recommending a complete evaluation of Tungi and M'buizi in order to preserve the cultural heritage, something that has not been realised at this juncture.

2.C.*V*. Summary

Through decades of dedicated research by archaeologists and historians, understanding of life in Late Iron Age Mozambique has gradually increased. This thesis sought to further develop archaeological knowledge of northern Mozambique and its role in long-distance trade relations and Islamisation in the region. Chibuene was possibly the first Islamised locale within the Mozambique Channel, followed immediately after, by settlements in the Comorian Archipelago (Sinclair 1982: 152). Legendary colonial ancestry aside, notions of which have been challenged by material and genetic data, the primary mechanisms for Islamisation in the region, while elusive, have become clearer with time (Brucato, *et al.* 2018). It would appear that Islam arrived on the central/southern shores of Mozambique as a result of archaeologically attested Indian Ocean-going trade which sought to access the wealth of the continental interior funneling through the region (Sinclair, *et al.* 2012). While it is probable that mercantile activity facilitated conversion at sites such as Chibuene, it is unlikely to have been the sole mechanism of Islamisation in the region. Migration of Islamised peoples along the coast certainly occurred, as observed elsewhere in the Mozambique Channel (Section 2.D), in addition to a gradual acceptance and syncretism of Islam within local belief systems. Social stratification and power relations might have played a hand in accelerating the process in later periods.

The islands of Quisiva, Mefunvo, and Sencar, and the site of Tungi on Cape Delgado were chosen by the author as the primary case studies for this thesis, as they are excellent candidates for subsurface sampling. These locales were selected based on a combination of available historical record, previous archaeological findings, aerial reconnaissance, and field-research accessibility (Adamowicz 2012: 36; Duarte 1993: 75). However, following archaeological reconnaissance in Spring 2018, the development of insurmountable logistical issues and increased security risk in the region prevented further direct academic enquiry and forced the focus of this thesis to shift (Anderson 2019).

2.D. Studies Within the Comorian Archipelago Focusing on Early Islamic Settlements

2.D.*I.* Introduction

Nearly equidistant from the African mainland and Madagascar, the Comorian Archipelago, composed of four main islands: Mayotte, Mwali, Ngazidja, and Nzwani (Anjouan), played a critical role in monsoon trade systems for over a millennium (Figure 2.7) (Newitt 1983: 139). Historical accounts of voyages along the islands, bolstered by genetic, material, and linguistic data illustrate the longevity of this passage which provided sheltered harbors in the turbulent Mozambique Channel for thousands of years (Boivin, *et al.* 2013: 217, 241; Wright 2017a: 268). The modern peoples of the archipelago are a diverse amalgam of Bantu, Malagasy, and Arabic-speaking groups of predominantly African heritage, with notable Middle Eastern and Southeast Asian influence (Boivin, *et al.* 2013: 256-257; Wright 2017$_a$: 268). The archaeological record corroborates linguistic and genetic data as site assemblages demonstrate a deep continuity of interaction with the greater Indian Ocean, particularly the Persian Gulf and Southeast Asia. Crucial to this study's research objectives is the Comoros' role as a transshipment hub linking southern Mozambique, Madagascar, the Swahili Coast, and the Middle East, facilitated relatively early, *circa* 8th century, Islamisation within the archipelago (Pollard and Kinyera 2017: 927; Wright 2017$_a$: 275). Nzwani Island, in particular, developed into a highly regarded regional centre of Islamic learning with a sizeable Muslim population as early as the 12th century and continues to train scholars from throughout Sub-Saharan Africa to this day (Freeman-Grenville 1975: 19; Wright 2017$_a$: 267). The proximity of early Islamic settlements on Mayotte and Nzwani to the oldest-known Islamic Malagasy town, Mahilaka (Section 2.E.*III*.a), in conjunction with assertions of Shirazi and/or Antalaotra heritage by some communities, strongly recommend that Islam arrived in Madagascar via the Comoros (Radimilahy 1998: 26, 37; Wright 2017$_a$: 268).

Archaeological examination of the Comorian Archipelago began in the 1960s with Vérin's investigation of sites on Mayotte and Nzwani with carved coral *miḥrāb*s in an attempt to establish links to Malagasy contemporaries, such as Mahilaka (Wright 1992: 85). Vérin sought evidence of these pre-Malagasy Austronesians at Domoni, Tsingoni, and Sima (Section 2.D.*II*.b) (Wright 2017$_b$: 278). Archaeological examination of the archipelago grew following Comorian Independence, and Maorais (Mayotte) reaffirmation of French rule, in 1975 and 1976, respectively. In 1977, Guy Billard found a series of middens north of the M'ro Adembeni Creek, near the town of Dembeni, a discovery that caught the attention of Susan Kus and Henry Wright who had investigated the site Hanyundru, Mayotte, in the previous year (Wright 2017$_b$: 278). Archaeological campaigns were conducted at Dembeni in the 1980s by Wright and by Pradines in 2013. The 1980s saw numerous expeditions led by Wright, in collaboration with Vérin, then head of the "Programme of Cooperation between France and the Republic of the Comoros", as well as the French archaeologist Claude Allibert (Wright 1992: 87). Nzwani was the focus of most fieldwork in this period, the data from which has been reexamined in the past two decades (Wright 1992: 88). Allibert surveyed much of Mayotte beginning in 1979 and continuing through the 1980s, recording and examining the sites of Bagamoyo, Kongou, Mirandolé, and Tsingoni (Allibert 1992; Wright 2017$_{b}$: 278). Allibert's excavations in the late 1980s/early 1990s helped map intra-island population movements through the presence/absence of ceramic typologies such as the Hanyundru series, a Dembeni Phase, 8th-10th centuries, successor with impressed motifs and red slips defined by Kus and Wright in the late 1970s (Allibert 1992; Wright 2017$_{b}$: 278, 280, 282). Research on Mayotte progressed steadily into the 1990s, growing in scale following the formation of the *Societé pour l'Archéologie et Histoire de Mayotte* at the start of the decade (Wright 2017$_{b}$: 279).

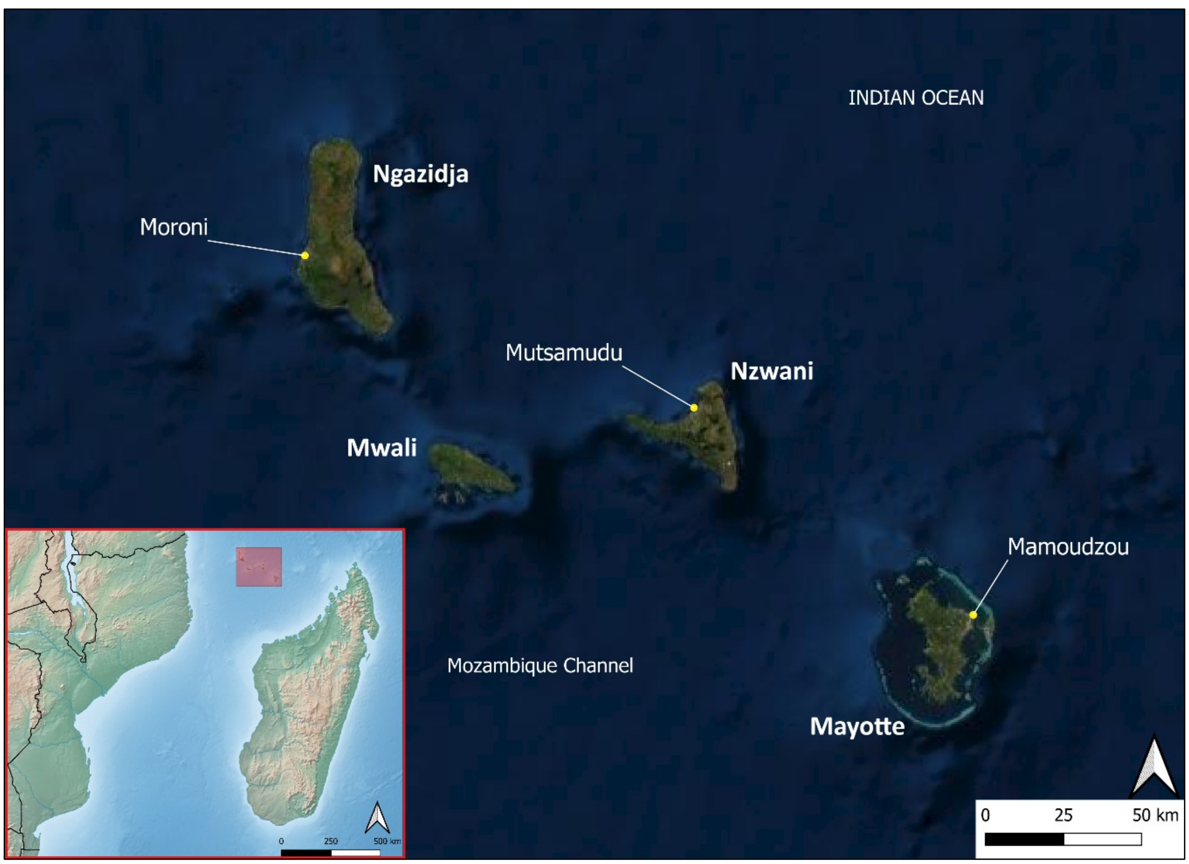


Figure 2.7: The Comorian Archipelago, including Mayotte.

Archaeology in the Comorian Archipelago in the mid-1980s was not constrained to Mayotte and Nzwani. Claude Chanudet, stationed on Mwali as a medical doctor, coordinated with road crews to survey much of the island (Wright

2017b: 278). In the early 1990s Paul Sinclair conducted a study on Ngazidja Island that centred on the island's largest Dembeni Phase site, M'Bachilé, building upon previous surveys (Wright 2017a: 270). The region experienced a relative lull in academic enquiry during the late 1990s/early 2000s following over two decades of intense research. The launch of Felix Chami's African Archaeology Network research initiative and book series in 2005 helped revitalise interest in the wider East African region and in the archipelago (Wright 2017a: 270).

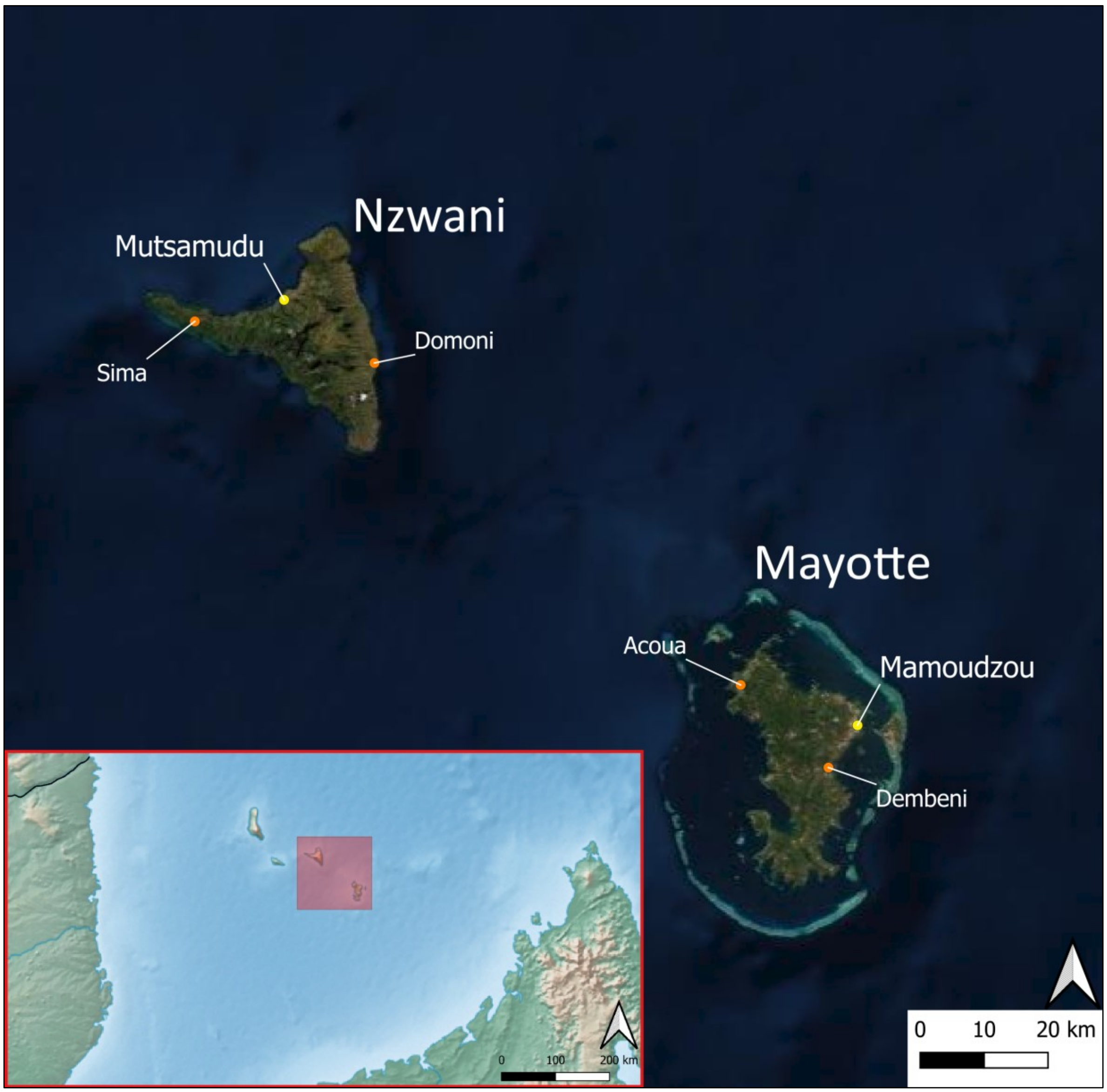


Figure 2.8: Select archaeological sites on Mayotte and Nzwani.

The mid-2000s saw a dramatic shift in archaeological methodology in the Comoros. Martial Pauly's long-term investigation of Acoua, Mayotte, was "comprehensive [in its] sampling" (Wright 2017b: 2798) and informed by local ethnographies and historical sources (Section 2.D.*II*.a) (Pauly 2017). The Sealinks project, a multi-institute collaboration that aims to better understand early Indian Ocean maritime connections, began work on Ngazidja and Nzwani in 2013, with the goal of improving understanding of the archaeobotanical assemblages of those islands (Crowther, *et al.* 2016; Wright 2017a: 270). Pradines excavated in eastern Mayotte in the same year (2013: 59). Archaeological campaigns in the archipelago continue, namely on Nzwani, led by Nikki Boivin and Mark Horton (Section 2.D.*II*.b) (Horton, *et al.* 2017). Though the total number of active archaeological projects in the Comoros have decreased over the past four decades, the overall quality of the interpretations produced, and the data from which they are derived, have drastically improved.

2.D.*II*. Archaeological Studies on Comorian Entrepôts and Notable Villages, 9th-12th Centuries

The following sections do not examine the foundational communities of the Comorian Archipelago, as there is considerable evidence for Late Stone-Age occupation of the islands, but instead focus on a period of social stratification, increased long-distance trade participation, and Islamisation which occurred near the close of the first millennium (Boivin, *et al.* 2013: 223). The 9th-12th centuries saw the construction of central mosques first in trading port towns on Nzwani and Mayotte, and eventually smaller settlements, following a wider trend of Islamisation across the eastern African coast and the southwest Indian Ocean world (Wright 1992: 126). The material record of the initial centuries of Islamisation exhibit a diversity greater than that of the "'Classic Period' of Comorian culture," or the 14th-15th centuries, possibly a consequence of expanding social hierarchy and regional authority (Wright 1992: 126). Palatial residences, significant in the archaeological record of the 13th century, seen as material manifestations of increased social inequality in the archipelago, are not present in the communities discussed within this section (Wright 1992: 127). Wright believes that the Islamic and "Shirazi" identity central to many Comorian communities today emerged in the 15th century as a consequence of the political growth of local Islamic dynasties and an associated reorganisation of social hierarchies (Wright 1992: 126). This hypothesis asserts that the Islamising mechanism for the Comoros was not individual conversions for favourable trade opportunities, due to the actions of foreign missionaries, exiled princes, or the slave kings of popular tradition (Freeman-Grenville 1975: 35; Rotter 1976; Wright 1992: 126). Cultural/religious syncretism hinted at by objects preserved in the archaeological record of settlements prior to, and relatively absent after, the expansion of Comorian dynastic power adds credence to Wright's hypothesis. As this thesis examines Islamisation in the Mozambique Channel, the period pre-dating the hegemonic "classical" phase of the Comorian Archipelago is of the greatest interest.

The following sites are arranged by geography from the geologically oldest Comorian island, Mayotte, to the youngest island, Ngazidja (Flower 1973: 237). Only select Comorian settlements originating in the 9th-12th century, namely those sites most pertinent to the investigation of Islamisation, are listed below.

2.D.*II*.a. Acoua (In the vicinity of: Lat. 12˚43'25" S ; Long. 45˚03'33" E)

The archaeological site of Acoua is located on the northwestern coast of Mayotte, adjacent to a present-day village of the same name (Figure 2.8). The 3.5-hectare settlement contains Islamic burials located in the ridgetop necropolis of Antsiraka Boira, coralline limestone residential structures, a perimeter wall, and the ruins of a stone mosque, one of the oldest known on Mayotte Island (Pauly 2017: 30-31). The site has been the focus of archaeological investigation by Martial Pauly since 2006 (Wright 2017b: 279).

Antsiraka Boira necropolis was formed as early as the 10th century, and serviced the Islamic population of Acoua between the 12th-14th centuries (Figure 2.9) (Pauly 2017: 30). Graves at the site were demarcated with stones set into either circular or rectangular arrangements (Pauly and Ferrandis 2018: 9). Pauly once argued that observed variation in the degree to which graves were demarcated might evidence local social hierarchy, but has reversed his opinion following extensive excavation (Pauly and Ferrandis 2018: 11). However, stone architectural remains were cited as evidence for social stratification by Pauly, describing some as high quality, perhaps representative of "aristocratic" dwellings (Pauly 2017: 30). Burials

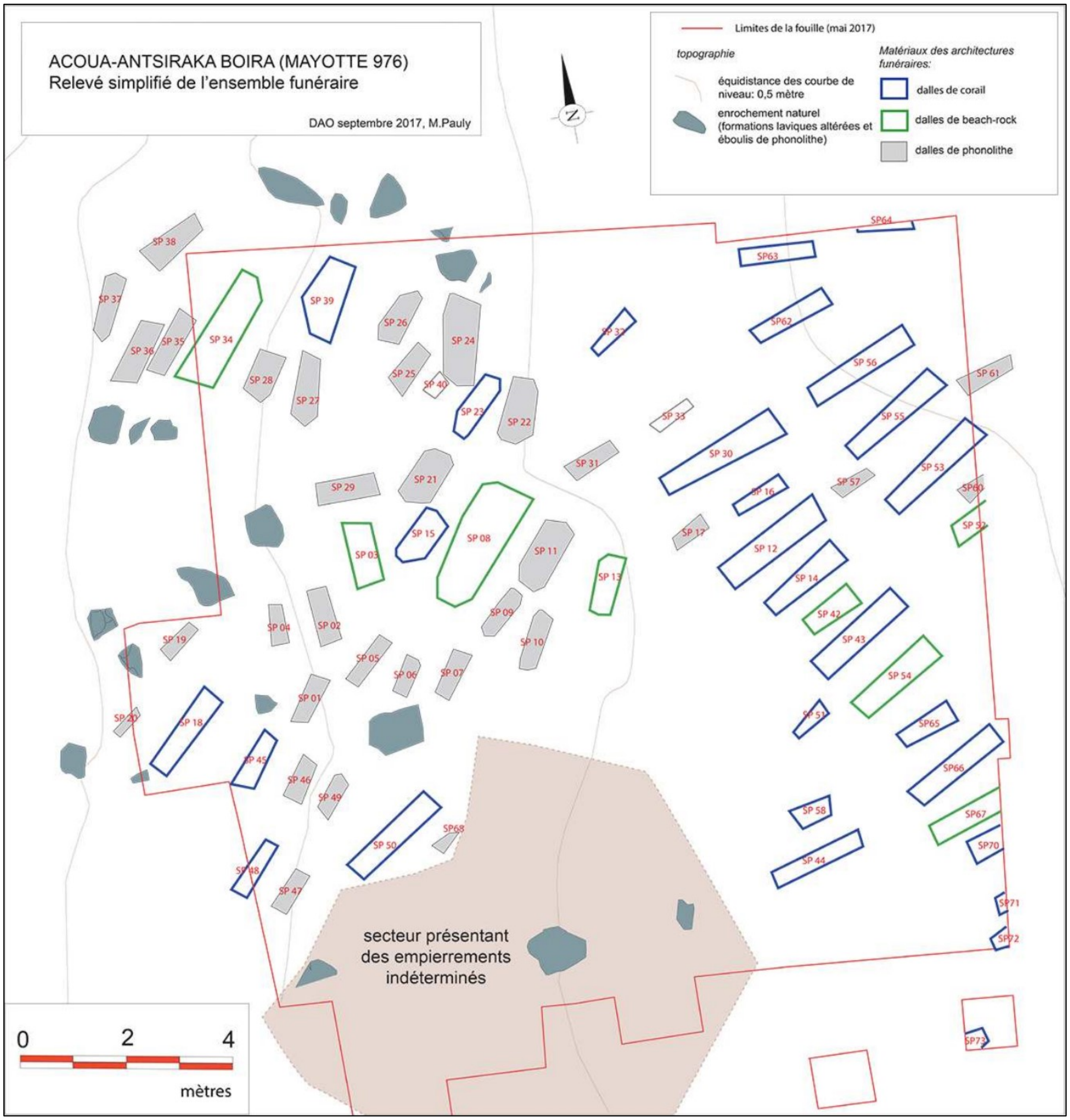


Figure 2.9: Map of Antsiraka Boira necropolis, Pauly and Ferrandis 2018: 10.

at Antsiraka Boira were excavated in 2012 (Pauly 2017: 30). Individuals were buried in accordance with Islamic practice, i.e. on their right shoulder facing the *qibla*, although grave goods were present (Figure 2.10) (Pauly 2014: 78). Pauly has argued that the presence of wooden coffins, in addition to grave goods demonstrated cultural syncretism on Mayotte during early phases of Islamisation (Fischbach, *et al.* 2016: 84; Pauly 2017: 30). One hundred beads, of more than 300 recovered from graves at the site, were analysed and sourced (Fischbach, *et al.* 2016: 83). This analysis revealed that most of the finds belonged to the "Indo-Pacific" typology, with notable similarities to the K-2 assemblage in South Africa (Fischbach, *et al.* 2016: 84). A portion of the samples were homogenous to 13th-17th century grave goods at the Vohémar necropolis in eastern Madagascar (Section 2.E.*IV*.a) (Fischbach, *et al.* 2016: 84).

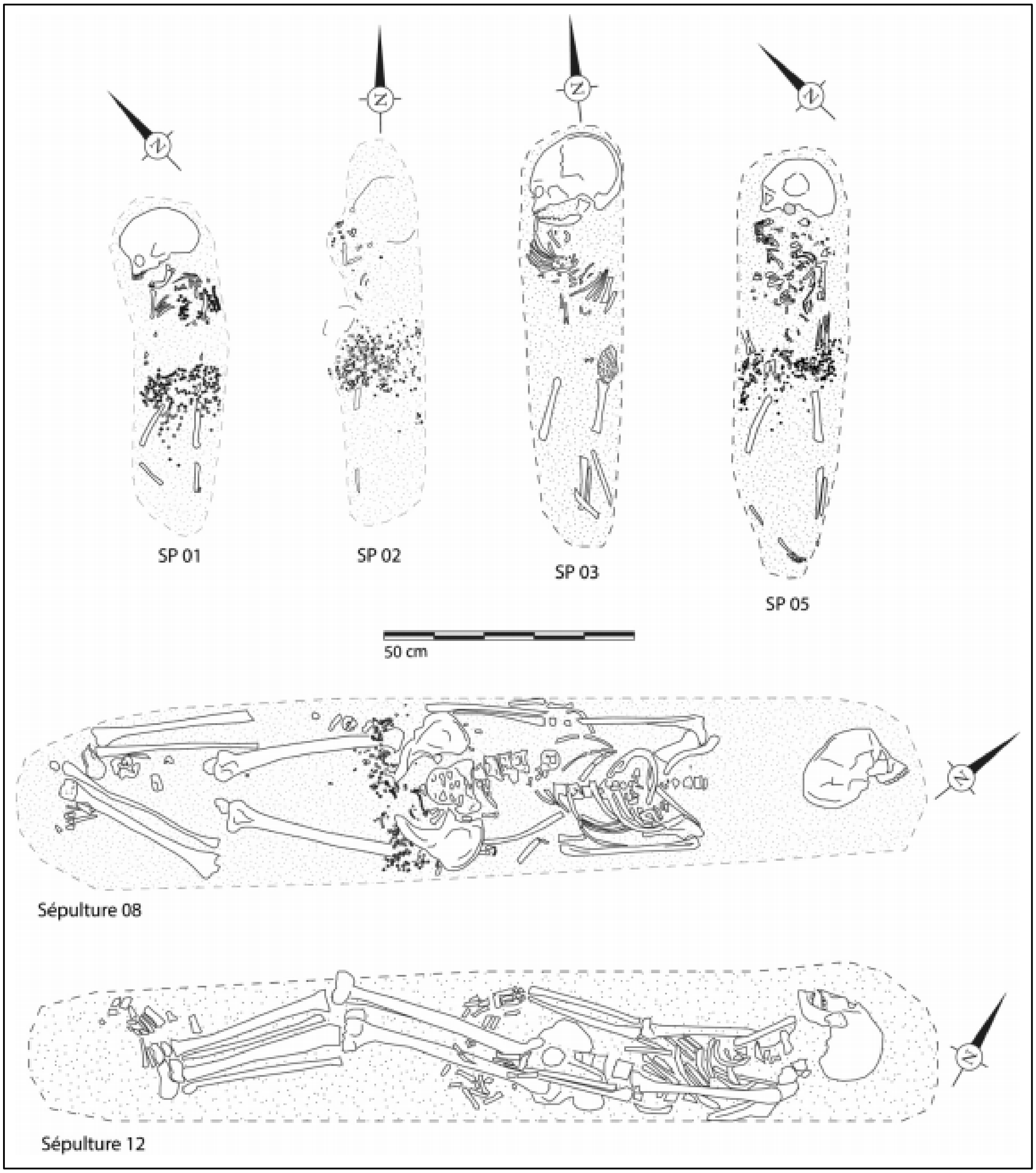


Figure 2.10: Burials at Antsiraka Boira, Pauly 2014: 78.

Faunal and archaeobotanical data for Acoua suggest continuity of pre-Islamic consumption patterns following Islamisation at the site. Rice, a non-endemic crop often associated with dietary Arabisation, or general shifts towards pan-Indian Ocean foodways (Section 5.A), of Islamised peoples along the Swahili littoral, was found in archaeological strata along with Sub-Saharan grains with deeper chronologies of cultivation on the continent, i.e. millet (Pauly 2013: 76; Pawlowicz 2013: 393; Walshaw 2010: 151; Winchell, *et al.* 2018). In addition to being a general-purpose cereal throughout Africa, millet has long been used in brewing beer and other alcoholic beverages. This millet consumption and production often decreased following Islamisation, a trend observed throughout Eastern Africa (Loimeier 2013: 93). However, this was not recorded at Acoua. Consumption of alcohol in many Islamic societies is *ḥarām*, potentially represented here through the presence of millet, as is the eating of hedgehog-like tenrecs, also accounted for at the site (Section 1.E.*I*) (Radimilahy 1998: 196; Wright 2017$_b$: 279).

Pauly argues that Muslims were present in Mayotte by the 9th century with Islamisation intensifying in the 11th-12th centuries (Pauly 2017: 30). Archaeological evidence at Acoua suggests that the transition was not immediate, as is often the case within Sub-Saharan African convert communities (Insoll 2003: 29-30). Traditional beliefs and lifeways persisted at Acoua and Antsiraka Boira alongside the newly adopted Islamic faith into the 12th-15th centuries, some of which likely continue to this day (Pauly 2017: 30).

2.D.*II*.b. Sima (In the vicinity of: Lat. 12˚11'57" S ; Long. 44˚16'17" E)

Nzwani is known to have housed prosperous trading towns in the early second millennium from historical Arab and East Asian sources, potentially being the "Andjaba" described by the 12th century geographer al-Idrīsī (Ferrand 1913: 174; Freeman-Grenville 1975: 19; Wheatley 1975: 107). The town of "Old" Sima, found on the western, ridge-lined peninsula of the island was one such port (Figure 2.8). Sima, and Nzwani Island as a whole, was a major exporter of turtle shells and transshipment hub for Malagasy goods (Wright 2017$_b$: 282). Iron, rice, and coconuts were exported as well, all of which have been identified archaeologically (Wright 1992: 113). The settlement once overlooked a lagoon, a feature which is thought to have filled with alluvium in the recent past (Wright 1992: 88). A partially collapsed mosque on the southern edge of the settlement, known as the Zira'at, is perhaps the most visible testament to the town’s longevity, and a structure with an active role in Sima’s religious identity to this day (Wright 1992: 88).

Sima was first recorded archaeologically by Vérin in 1966 (Wright 1992: 81, 85). His expedition sought evidence of Austronesian colonisation with the intent of mapping the movement of proto-Malagasy peoples from eastern Africa to Madagascar via the Comoros (Vérin 1970; Wright 1992: 86). Materials finds suggested strong connections with Madagascar, e.g. the remains of a large, four-legged chlorite schist basin, which functioned as an ablution station for the Zira’at (Wright 2017$_a$: 266). Chlorite schist, a highly valued, semi-malleable material also known as “soapstone” or “soft stone” was utilised regionally for cooking and storage vessels. It is thought that early-second millennium Malagasy craftsmen developed a specialised lathe-reduction technique for the working of the material (Section 2.E.*II*) (Serneels, *et al.* 2017). Radiocarbon and ceramic typological dating techniques performed on materials recovered by Vérin from a shell midden adjacent to the Zira’at, recommend a mid-9th to 10th century foundation for the site (Wright 1992: 86; 2017$_a$: 270). Vérin noted that the Zira’at’s *miḥrāb* was of a carved-coral style typical of eastern African Swahili sites (Wright 1992: 86). Ultimately, evidence for former Malagasy migration eluded Vérin, but recent research conducted by a 21-person team into population genetics of East Africa and the Mozambique Channel have identified the earliest evidence for Austronesian gene flow in the Comoros (Brucato, *et al.* 2018).

Sima was revisited by an archaeological team led by Wright in the early 1980s (1992: 87). Wright, accompanied by the architect James Knudstad in 1984, examined standing mosques and completed a series of test units (Wright 2017$_b$: 278). Excavations targeting the Zira’at were limited to open spaces adjacent to the northern/western outer walls. Wright reexamined architectural, faunal, and floral data from the 1984 excavations as part of a project a decade later (Wright 1992: 88). The Sealinks Project, launched in 2013, sought to improve on the understanding of Sima through a re-analysis of archaeobotanical materials (Wright 2017$_a$: 272). Small-scale excavations in a clay borrow-pit found burnt rice and seeds, radiocarbon-dated to the 8th-10th centuries, potentially indicating a localised sharing of foodways and trade ties with Indian Ocean networks (Crowther, *et al.* 2016; Walshaw 2010: 151).

Additionally, a 9th century context inspected during this project produced a flake of crystalline quartz that could represent the waste from a rock crystal workshop (Horton, *et al*. 2017: 114).

The mosque at Sima was constructed of locally sourced basalt, lime plaster, and shaped coral which appears to have been the primary building material for the structure up until the 15th century (Wright 1992: 91, 105). Wright determined that there had been at least three building phases, with definitive evidence for a mosque in the 11th century, making it the oldest example of a masonry mosque in the Comoros (Wright 1992: 88, 92; 2017b: 284). Continuity of wall/wall trench orientation observed in subsurface stratigraphy recommend that previous structures at the location had also been mosques (Wright 1992: 92). Postholes were found in the terminal context which Wright believes represent a domestic structure (Wright 2017b: 281). Finds of processed tenrec remains in the same strata might indicate that Sima possessed a religiously heterogenous population prior to the construction of the masonry mosque (Wright, *et al.* 1984: 51).

An excavation conducted by Mark Horton in 2019 found an intact Muslim burial at Sima dating to approximately the 10th century (*pers. comm.* 14 June 2021). This burial appears to evidence Muslim habitation at Sima in the century prior to the earliest construction phases of the Zira'at. However, the results of this excavation are currently unpublished.

The oldest archaeological strata at Sima possessed Dembeni series ceramics, 8th-10th centuries, the only examples of the typology on Nzwani (Wright 1992: 84; 2017a: 271). Notable imports included opaque white and Turquoise Glazed wares, Abbasid trade-goods found within 9th-10th century strata, numerous small sgraffiato bowls, what appears to be a rim sherd of 13th century Kilwa ware Type 14 painted black, two sherds of unidentified incised, olive-green glazed stoneware, possibly Song Dynasty, 10th-13th centuries, and fragments of 15th century East Asian celadon including a bowl which had been set into the mosque's wall (Wright 1992: 88, 91, 105). Additionally, four fragments of chlorite schist vessels, almost certainly produced in Madagascar, were found (Wright 1992: 105, 112). Given the temporal context and the proximity of Nzwani to Ampasindava Bay, it is possible that these chlorite schist vessels came from Mahilaka (Section 2.E.*III*.a).

2.D.*II*.c. Nyamawi (In the vicinity of: Lat. 11˚22'29" S ; Long. 43˚22'46" E)

The site of Nyamawi, located on the northern shore of Ngazidja, was found by the Sealinks Team in 2013 (Figure 2.11) (Boivin, *et al.* 2013; Wright 2017a: 274). Cliff erosion exposed middens, preserved flooring rich in artefacts, and an early Islamic burial (Wright 2017a: 271, 274). The interred individual, identified as an adult male with removed incisors, is buried in accordance with Islamic rites (Wright 2017a: 274). Limited subsurface investigation was conducted with the explicit purpose of establishing a site chronology. Undecorated, Dembeni Phase morphologies and copious amounts of marine shell were recovered (Wright 2017a: 274). No imported ceramics were found. Radiocarbon samples, obtained via soil flotation, dated to the late 9th to early 11th centuries (Wright 2017a: 274).

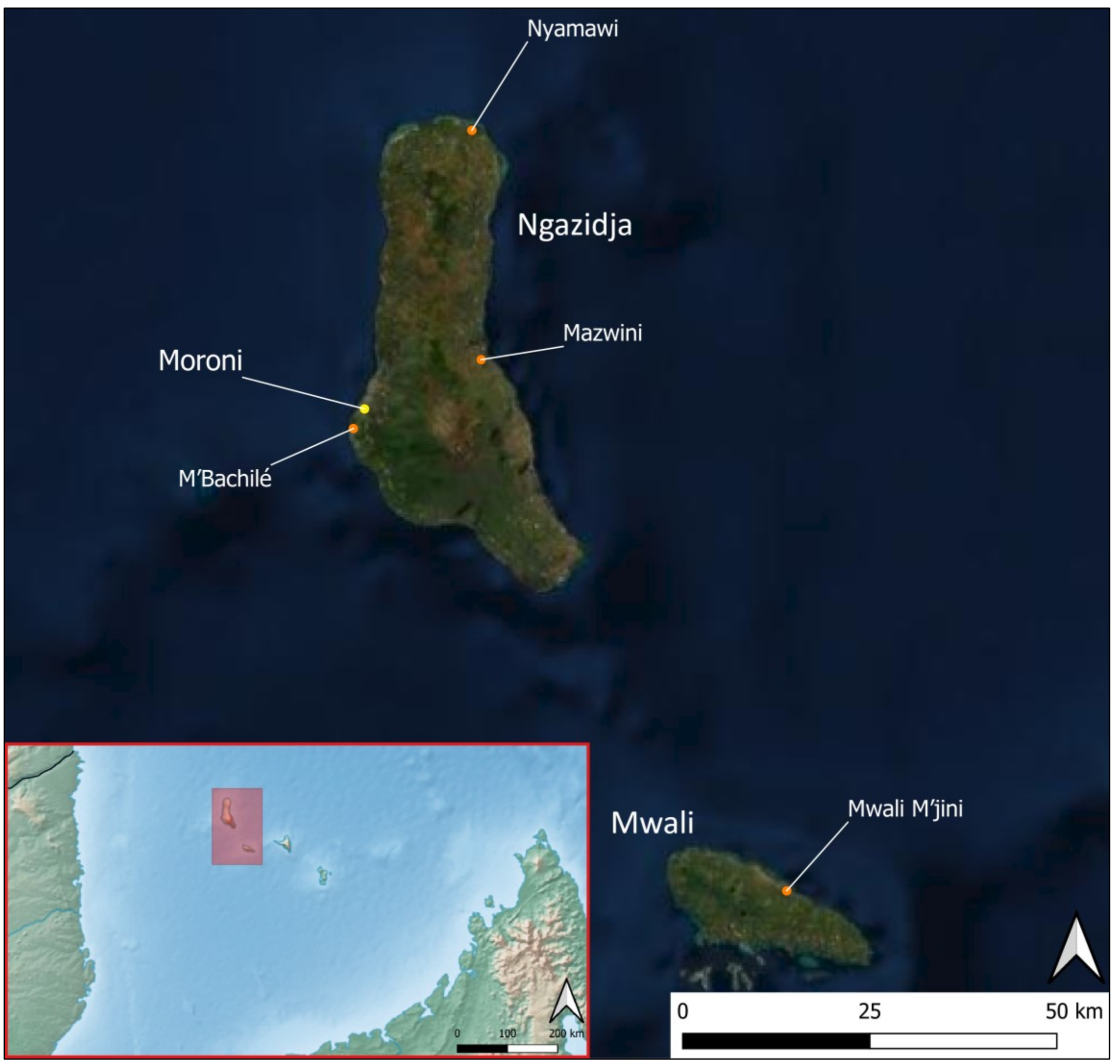


Figure 2.11: Examples of archaeological sites on Mwali and Ngazidja.

Wright believes that the humble ceramic assemblage recovered at Nyamawi is indicative of a small fishing village (Wright 2017a: 274). If this is truly the case, then the find of an early Islamic burial, 9th-11th century, is extraordinary (Wright 2017a: 275). Twentieth century researchers, e.g. Chittick and Sinclair, argued that one of the major forces driving the Islamisation of the Swahili littoral was trade tied to stone towns (Horton and Middleton 2000; Wynne-Jones 2016: 195-196). However, Nyamawi appears to have been engaged in no long-distance trade and had no stone architecture yet possessed an early Muslim population. Other Comorian sites possibly had Muslim communities without masonry structures, e.g. Domoni, but Nyamawi seems to be an outlier. Early-second millennium interconnections reconstructed through the archaeological record indicate that the Islamisation of Nzwani and Mayotte were facilitated through habitual trade with Muslim merchants, which does not seem to have been the case for the entirety of the Comorian Archipelago (Wright 2017a: 275). While much work remains to be done at Nyamawi, it is possible that this locale represents an early Islamic community outside of traditional models for the East African frontier.

2.D.*III*. Summary

Hypothetical links derived from the existing archaeological and ethnographic data can be mapped between various communities in the Mozambique Channel. Archaeological assemblages, and sourced raw materials demonstrate that the Comorian Archipelago functioned as a transshipment hub, facilitating commercial as well as cultural exchange between Madagascar, the Swahili coast, and the rest of the Indian Ocean world by the 8th century (Pollard and Kinyera 2017: 927; Wright 2017a: 275). It should be emphasised that regional relationships in the Mozambique Channel were not purely mercantile. The Tungi Chronicles claim that the first Islamic peoples to settle the region came from Ngazidja, following the eruption of Mount Karthala (Rzewuski 1991: 193). Comorian traditions parallel this narrative, asserting that northern Mozambican Islamic towns were founded by the same Shirazi brothers who established Kilwa and Sima (Rzewuski 1991: 193). The present-day population of Mahilaka describe their faith as “Anjouani,” likely to directly connect themselves with the Islamic schools of Nzwani and its early Islamic centres (Chantal Radimilahy *pers. comm.* 10 September 2018). Outside of chlorite schist and rock crystal remains recovered at Dembeni and Sima, evidence for substantial relationships between northern Madagascar and early Islamic Comorian communities has yet to be conclusively identified (Horton, *et al*. 2017: 114). However, the geographical proximity of known settlements, approximately a day's sail between Mayotte and Ampasindava Bay, would recommend that frequent and substantial connections were feasible (Wright 2017$_{a}$: 268).

The presence of late-first millennium Islamic remains, namely the possible 9th century burial at Nyamawi and the 10th century mosque at Sima, help to contextualise long-held associations of the Comoros with Islam and Islamic learning in the Mozambique Channel (Wright 1992: 126). The Zira'at at Sima, the post structure which preceded it, and Domoni predate all Islamic settlements in Mozambique (Section 2.C), with the possible exception of Chibuene, and the earliest known Malagasy mosque, a 12th century building at Mahilaka (Section 2.E.*III*.a) (Radimilahy 2017: 287). The archaeological record for Late Iron Age Comorian settlements recommend a diversity of Islamisation mechanisms. Islamic individuals living in the port towns of Acoua, Domoni, and Sima were involved in frequent Indian Ocean exchanges represented by Middle Eastern imported wares found in archaeological strata of the period (Wright 1992: 88, 91, 105). It is suggested that trade with Islamic merchants was the medium by which the religion reached these communities and was propagated in this early period (Wright 2017$_{a}$: 275). Nyamawi, a small fishing outpost with no imported goods or clear long-distance trade ties, could represent a wholly different Islamisation event. The individual at Nyamawi buried according to Islamic rites might have been a migrant from mainland East Africa, evidenced by the ritual removal of his incisors (Wright 2017$_{a}$: 271). This complicates the picture of early Islamisation in the Comoros. Was this individual of the same sectarian affiliation as those of the port cities? The ubiquity of Dembeni series ceramics in late-first/early-second millennia strata demonstrates that these communities were in contact with one another. What was the nature of this relationship? How did these communities interact with Muslims elsewhere in the Mozambique Channel? A preliminary answer to these questions could be that the port cities were the principal locales of Islamisation, while the individual at Nyamawi represents secondary, largely migrational, Islamisation events (Section 5.C.*II*). The advancement of archaeological methodologies in the Comorian Archipelago is on a positive trajectory and will hopefully begin to better address topics such as these in the near future.

2.E. Studies within Northern Madagascar Focusing on Early Islamic Settlements

2.E.*I*. Introduction

Protection of historical traditions has long been significant to the maintenance of identity in Madagascar and thus cultural heritage was touted by the Malagasy as direct evidence of ancestral claims and the longevity of practice (Dewar and Wright 1993: 420). Therefore, it is only natural that the first peoples to consider Madagascar's heritage in an archaeological light was the Malagasy themselves. Raombana, the English-trained historian and secretary to Queen Ranavalona I, recorded cultural remains at the site of Fanongoavana, Imerina, a fishing village from which royal lineages emerged, in 1835 (Dewar and Wright 1993: 420).

European scholars first investigated the Madagascar in the late 19th century (Radimilahy 1998: 14). These early efforts were largely unfocused and opportunistic, as attested by the work of A. Jodin (1922: 105) and A. Jully (1898) at Mahilaka and Antsoheribory, respectively. Early 20th century archaeological interest in Madagascar was motivated by the acquisition of "curiosities" for European museums, where many of the objects obtained at this time are still housed (Radimilahy and Crossland 2015: 498). Not all academics were focused on tangible cultural heritage, however, as Alfred Grandidier sought to understand the Malagasy people and their transoceanic origins (Grandidier, *et al.* 1903). In fact, he was first to recommend a Southeast Asian origin for the Malagasy, based in part on linguistic attributes (Radimilahy 1998: 14). Colonial models developed by European archaeologists presented coastal settlements as concrete evidence of imported, decidedly foreign culture, seemingly systematically disregarding data for an early African presence (Radimilahy and Crossland 2015: 498). Research published in the early decades of the 20th century was unilaterally sensational, focused on imports, and generally incomplete (Radimilahy and Crossland 2015: 498). Goals defined by the French *Mission Civilisatrice*, a colonial rationale with the alleged purpose of civilising, in this case specifically referring to Western European Christian civilisation, of Non-European indigenous peoples (Burrows 1986), prioritised data which could be manipulated to justify their elite position when constructing narratives and stressing academic pursuits (Radimilahy 1998: 14). Islam, and corresponding material remains, were presented as indicative of Madagascar's colonial past, establishing a precedent for French rule, an argument made by Vernier and Gaudebout following their excavation of tombs at Vohémar in the 1940s (Radimilahy 1998: 14; Schreurs, *et al.* 2011: 2). The archaeology itself was large-scale, destructive, and poorly documented, and its legacy resonates today.

Islamic settlements in northern Madagascar, the favoured topic of colonial explorers in the late 19th/early 20th centuries, became an academic afterthought in the construction of the post-independence Malagasy narrative in the mid-20th century, and again in the 21st century (Radimilahy 1998: 14; Radimilahy and Crossland 2015: 499). Malagasy independence from France in the 1960s fostered academic nationalism movements that sought to de-emphasise any perceived foreign or colonial story, which consequently resulted in a general shift away from study of Islamic entrepôts (Radimilahy 1998: 14). This necessitated a reconstruction of the country's history and heritage narratives in a manner not derivative of previous European models (Radimilahy and Crossland 2015: 499). The importance of tangible cultural heritage in these discussions was tentative, and often debated, as most communities favoured oral tradition, with the exception of those locales with regional legendary figures (Radimilahy and Crossland 2015: 499). Student revolutions in the early 1970s and the fall of the First Malagasy Republic in 1972 reopened the door for archaeological research in Madagascar, as deep, unifying histories were sought (Radimilahy and Crossland 2015: 499). Research into pre-Islamic Madagascar, African influence, extinct megafauna, habitat transformation, and Malagasy origins exploded in the final decades of the 20th century as a result (Radimilahy 1998: 15; Radimilahy and Crossland 2015: 499).

Not all enquiry into Islamic settlements on Madagascar ended after Malagasy independence, as Vérin led dozens of coastal surveys and small-scale excavations in the 1960s-80s and also pioneered systematic archaeological research for the island through the University of Madagascar (Dewar and Wright 1993: 420). Chantal Radimilahy says in her 1998 work, *Mahilaka*, that Vérin was responsible for finding 16,400 archaeological sites, some of which are discussed below (Radimilahy 1998: 15). Vérin utilised an "ethnographic excavation" framework, taking present-day communities and their histories into consideration, a methodology that produced complex and interconnected chronologies for much of northern Madagascar (Radimilahy 1998: 15; Vérin 1986). This work was not wholly centred on coastal settlements, as he also directed research into human impacts and associated late megafauna extinctions in partnership with Battistini, Central Highlands archaeology, and investigations into Malagasy linguistic roots (Dewar and Wright 1993: 420). Much of the megafaunal collection compiled at this time has been subsequently evaluated by paleontologists and is a vital dataset for understanding past environments in Madagascar (Dewar and Wright 1993: 423).

Malagasy archaeological investigations in the 1970s primarily followed a cultural-historical approach, e.g. Rakotoarisoa's small-scale studies of the Merina state (Radimilahy 1998: 15). Meanwhile, Wright began constructing ceramic typologies for artefact assemblages from dozens of sites around Antananarivo (Radimilahy 1998: 15). These typologies were the first of their kind for much of Madagascar and became crucial tools in relative dating and in the reconstruction of regional trade-lanes across the country (Dewar and Wright 1993: 421). Wright's typological techniques were used in the regions adjacent to the Central Highlands and the assemblages in the far south and southeast to great effect (Dewar and Wright 1993: 421).

Academic research in Madagascar increased significantly beginning in the 1980s and so did the varied analytical frameworks employed for understanding the island's cultural heritage. Victor Raharijaona and Rakotoarioa investigated the south and southeast according to processual archaeological theories (Radimilahy 1998: 15). David Rasameul and Rafolo led large-scale projects lasting over a decade at the 15th-18th century sites of Fanongoavana and Lohavohitra, respectively (Radimilahy 1998: 15; Radimilahy and Crossland 2015: 498). Kus introduced new socio-politically informed concepts into the field with her studies on the "imprint of symbolic meaning", an application of cognitive archaeology (Radimilahy and

Crossland 2015: 497). By the mid-1990s, archaeologist such as Robert Dewar, Rakotovololona, and Ratsimbaharison, began to re-emphasise ethnographic sources and environmental indicators in their works (Radimilahy 1998: 16). At this point, archaeological research in Madagascar was diverse and covered almost all accessible regions of the island.

Large-scale projects with holistic approaches to data collection and analysis in Northern Madagascar for all intent and purposes began in the late 1980s/early 1990s with Radimilahy's examination of Mahilaka, in conjunction with the Uppsala University's "Urban Origins in Eastern Africa" programme (Section 2.E.*III*.a). Radimilahy has continued to be engaged with, and a leader of, numerous internationally staffed investigations at sites such as Mahilaka, Vohémar, and Benavony, over the past three decades (Serneels, *et al.* 2017). Western researchers, including Zoë Crossland, Mike Parker Pearson, and Guido Schreurs have shown increased interest in Madagascar since the late 1990s (Radimilahy and Crossland 2015). Collaborations between Malagasy and western scholars have produced publications which not only reevaluate past studies but present novel research which considers a diverse range of contexts and specific ethnographic and indigenous influences on cultural assemblages that were previously ignored (Radimilahy and Crossland 2015: 498).

The following sections organise known Malagasy archaeological locales based on chronology. This segment is not a comprehensive list, but rather details a selection of those northern, coastal archaeological sites which have received some degree of academic exploration and played a part in the Islamisation of the Mozambique Channel.

2.E.*II*. Archaeological Studies on Late First Millennium AD Northern Malagasy Sites

The following archaeological sites date to the late first millennium (Figure 2.12). The locales investigated here are not the earliest on the island, as two northern rock-shelters, namely Lakaton'i Anja, sporadically inhabited from as early as second millennium BC to the 14th century, and Ampasimahavelona, occupied from the 8th century onwards, evidence many centuries of habitation prior to the sites discussed below (Dewar, *et al.* 2013: 12585; Crowther, *et al.* 2016: 6637). In fact, the ceramics from Ampasimahavelona, defined as a distinct series dating between the 8th-10th centuries, is the oldest pottery on Madagascar and might serve as artefactual markers for the earliest Austronesians on the island (Crowther, *et al.* 2016: 6637; Horton 2020: 26). However, evidence of Islamisation in this period has largely eluded archaeologists, but residue of contacts with the Islamic world, particularly the Persian Gulf, is well represented in the material record of some sites. Nosy Mangabe (Section 2.E.*II*.a) for example, had connections to Middle Eastern merchants and was possibly even founded by a community similar to those of its 8th century contemporaries in the Comoros (Dewar and Wright 1993: 430-431). While the Malagasy sites discussed in this chapter vary in geography, usage pattern, and overall typology, they all exhibit early Indian Ocean mercantile connections, local industry, and habitation longevity unseen before on the Island.

2.E.*II*.a. Nosy Mangabe (Lat. 15˚29'42" S ; Long. 49˚46'08" E)

Archaeological remains on the isle of Nosy Mangabe, Antongila Bay, northwestern Madagascar, evidence human settlement as early as the 8th century, with some degree of habitation until the 18th century (Figure 2.12) (Dewar and Wright 1993: 429). Nosy Mangabe, a protected nature reserve today, has an area of roughly 52 hectares and is 4 km south of the mainland in the bay (Dewar and Wright 1993: 429). The island rises steeply up to a height of 330 m above sea level and is covered in dense rainforest (Dewar and Wright 1993: 429). Despite evidence existing for continuous habitation at Nosy Mangabe beginning in the 8th century, there is no evidence for anything more than transient settlement on the nearby Madagascar mainland until the 10th century (Dewar and Wright 1993: 431).

Nosy Mangabe was frequented by European traders in the 16th-17th centuries according to Vérin, who first surveyed and excavated on the island in the 1960s (1975b: 891-897). During these subsurface probes, Vérin noted that aggradation rates were much higher during the periods of human habitation on the island (1975b: 883). A visible decrease in alluvial accumulation following the settlement's termination was also observable in the stratigraphy, a trend recorded by Wright during a 1980s reevaluation of the site (Dewar and Wright 1993: 430; Vérin 1975b:

883). Both academics theorised that human generated deforestation increased hillside erosion and landslides on Nosy Mangabe (Dewar and Wright 1993: 430).

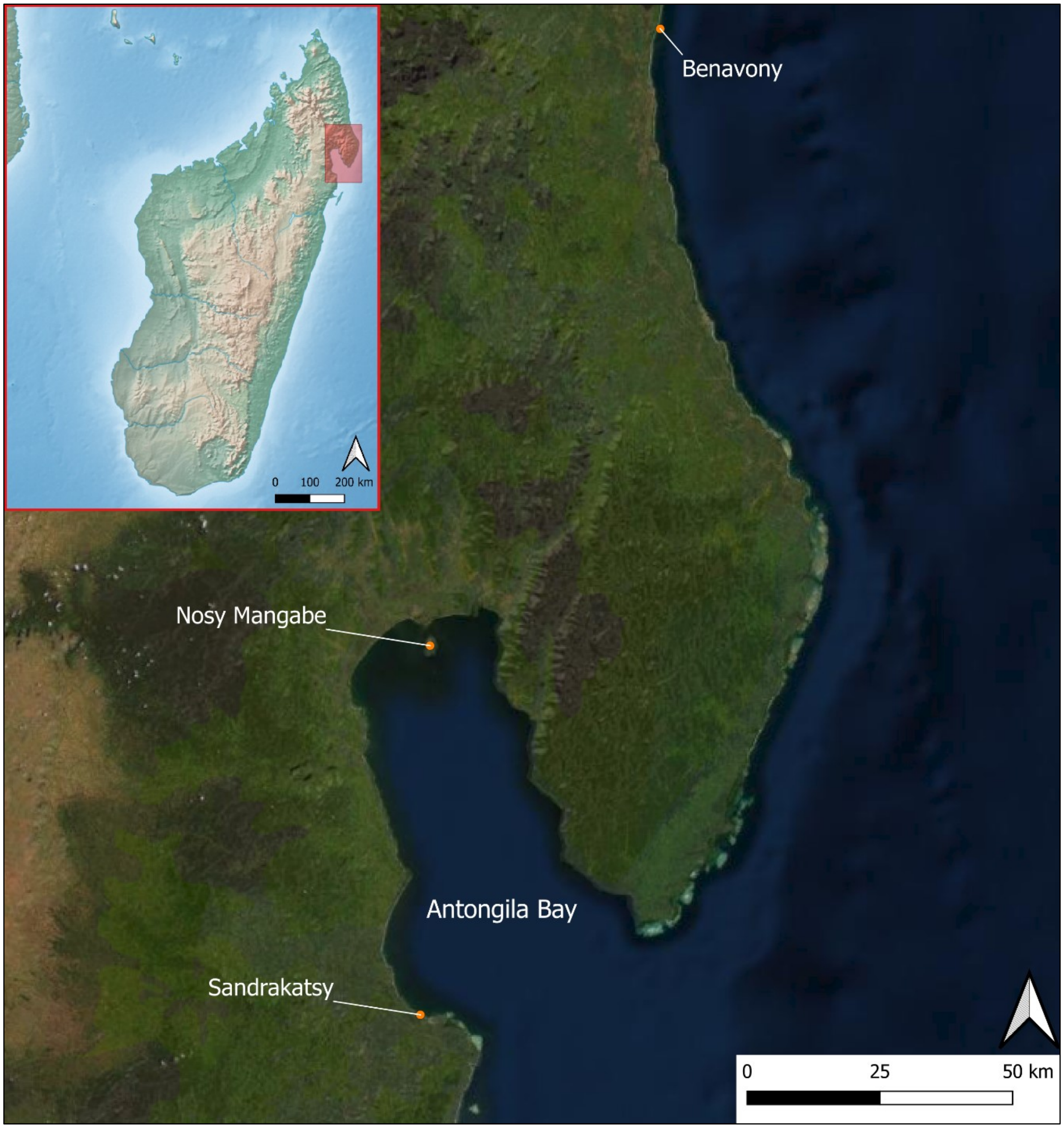


Figure 2.12: Select Malagasy archaeological sites dating to the late First Millennium.

Artefacts from the site suggest engagement with regional and transoceanic trade beginning as early as the 9th century, a chronology coinciding with foundational dates for the oldest known archaeological sites in the Comorian Archipelago (Dewar and Wright 1993: 430-431; Horton and Chami 2017: 142), as already described. The initial archaeological levels at the site contain fragments of chlorite schist vessels, local earthenware sherds, and iron slag (Dewar and Wright 1993: 430). Ninth to 10th century strata, thermoluminescence dated, also possessed sherds of Middle Eastern “White Glazed Ware” and turquoise-glazed ware, series also recovered from coastal East African and Comorian archaeological sites (Dewar and Wright 1993: 430; Horton and Chami 2017: 142). The presence of opaque glazed wares at Nosy Mangabe would suggest 9th-10th century Indian-Ocean mercantile connections for northeastern Madagascar. The scope of these exchanges was likely small-scale, as imports are infrequent. It is possible that the community at Nosy Mangabe was directly tied to Comorian, Dembeni Phase settlements, with which they traded (Dewar and Wright 1993: 431). The Comorian communities of this period, specifically the tradespeople of Sima and Domoni, were in the early stages of Islamisation. Thus Nosy Mangabe was certainly indirectly exposed to the faith (Section 2.D.*II*.b). Nosy Mangabe’s topmost archaeological strata contained European goods, Dutch beads, and lead bullets, as well as a variety of mass-produced 18th century East Asian ceramics (Dewar and Wright 1993: 430; Vérin 1986: 275). No stone architecture is noted in any archaeological reports on the site. Ultimately, considerable archaeological and geological investigation remains to be done at Nosy Mangabe to determine the local and regional impact of the settlement (Dewar and Wright 1993: 430).

2.E.*III*. Archaeological Studies on Northern Malagasy Sites, 1000-1500 AD

Coastal northern Madagascar was certainly the initial locus of permanent, long-term, urban habitation on the Island (Dewar and Wright 1993: 417). Current understanding of the region is that second millennium sites did not necessarily develop from their first millennium predecessors (Dewar and Wright 1993: 431). Material evidence from early Malagasy villages, principally ceramic data, recommend an influx of peoples from the African mainland to the northwest, via the Comorian Archipelago, in the late-first millennium, followed shortly after by peoples of Austronesian origin (Boivin, *et al.* 2013: 241; Dewar and Wright 1993: 433).

The oldest known urban settlement in Madagascar is located in Ampasindava Bay, less than 40 km southwest of Nosy Be (Figure 2.13) (Dewar and Wright 1993: 433). While not dissimilar from their northern coastal contemporaries at their inception, archaeological finds suggest that these villages were positioned to bolster access to Indian Ocean trade (Radimilahy 1998: 69; 2017: 288). In the 10th century a settlement cluster at the southwestern margin of Ampasindava Bay consolidated into the powerful economic entity of Mahilaka (Section 2.E.*III*.a) (Dewar and Wright 1993: 434; Radimilahy 1998: 21, 72). Peaking in prosperity between the 11th-14th centuries, Mahilaka rapidly dissolved into smaller villages by the 15th century (Radimilahy 2017: 285).

Boeni Bay, located west of Mahajanga and Bombetoka, was home to numerous second millennium urban settlements which flourished following the 15th century collapse of Mahilaka (Figure 2.13) (Radimilahy 2017: 288; Vérin 1986: 157). Vérin (1986: 72) has argued that the development of new settlements along the western coast of Madagascar, including those in Boeni Bay, was bolstered by oceanic trade access and a presumedly related focus on urbanisation that swept southward from Mahilaka (Hooper 2011: 220). Vérin postulates that the mid-second millennium proliferation of Malagasy coastal entrepôts was tied to the migration of the mercantile Antalaotra, Islamic groups who once spoke Swahili and wrote in Arabic script (Hooper 2011: 220; Vérin 1986: 72). The Antalaotra claim Middle Eastern heritage with ties to East Africa and the Comoros (Hooper 2011: 220; Sicard 2011: 103). The oral traditions of Kingany attribute the foundation and emergence of Islamic settlements in Boeni Bay to a pair of Shirazi brothers (Vérin 1986: 75). These narratives describe the brother's journey southwards along the western coast, before they separated and established the island towns of Nosy Manja (Langany) and Nosy Makamby (Vérin 1986: 75). However, as is the case for other East African communities who claimed Persian Gulf heritage, e.g. Kilwa Kisiwani, cultural remains in Madagascar do not contain any evidence of Shirazi colonisation (Section 1.E.*III*) (Wynne-Jones 2016: 57). Data does not entirely discredit the leitmotif of Islamised peoples with transoceanic connections migrating along the northern coast of Madagascar, as their legacy is preserved in a number of related settlements (Vérin 1986: 72; Wynne-Jones 2016: 12).

Material remains from the following archaeological sites in northern Madagascar suggest foundation periods between 1000-1500.

2.E.*III*.a. Mahilaka (Lat. 13˚48'17" S ; Long. 48˚18'50" E)

Mahilaka, named for the giant palms found within the site, was discovered in 1904 by a French colonist, M. Millot, whose work subsequently gained the attention of Jodin in 1913 (Figure 2.13) (Jodin 1922: 105; Radimilahy 2017: 286). Jodin conducted rudimentary excavations there shortly after, and found dressed coral, ceramic debris, a large stone spindle whorl, grinding stones, large fired clay beads, and a nugget of gold, a find which was immediately "lost" (Jodin 1922: 105-106). Jodin thought that the architectural remains were from an Arab "invader" village, but found the local inhabitants "absolutely silent" in regard to the ruins (Jodin 1922: 106).

Figure 2.13: Select Malagasy archaeological sites dating to 1000-1500 AD, part 1.

Mahilaka was visited infrequently by academics, including Barat de la Jesse, J. Poirier, and Vérin, in subsequent decades (Radimilahy 1998: 35). In the 1970s, Vérin conducted a limited excavation with the intent of constructing a local cultural stratigraphy and chronology (Radimilahy 1998: 11). This led to Mahilaka being connected with its contemporary at Ambariotelo, an island northeast of the site, by Radimilahy (2017: 287). It is possible, based on the proximity and composition of the two sites, that Ambariotelo might have functioned as a refuge of sorts for the inhabitants of Mahilaka, a theory posited by Vérin and later supported by Radimilahy

(Radimilahy 2017 287). Artefacts, specifically 12th-14th finds from the Persian Gulf, prompted Vérin's description of the site as a trading centre (Radimilahy 2017: 286). Arabic sources regarding Mahilaka are scant, with the most plausible direct reference contained within the 14th century geography *Taqwīm al-buldān* by the historian and geographer Abū al-Fidāʾ (Beaujard 2019$_b$: 381). Abū al-Fidāʾ described the location of the city of "Layrāna", which, according to Claude Allibert, might be Mahilaka, though this assertion is debated (Section 2.E.*IV*.a) (Allibert 1999: 335).

The full extent of the 70 hectare site was not discovered until the late 1980s by Radimilahy (1998: 11). Her excavations revealed that Mahilaka contained considerably more permanent/stone architecture than previously thought, including a city wall and various foundations some of which were more than two metres below the surface (Figure 2.14) (Radimilahy 2017: 286). Academic investigation at the locale continues to this day making it one of the most researched and best understood sites in northern Madagascar.

Figure 2.14: Mahilaka fort wall. September 2018.

The chronology, growth, and regional impact of Mahilaka parallels that of the Swahili coast towns, e.g. Chibuene, Manda, and Shanga, and sites within the

Comorian Archipelago (Horton 1996b; Radimilahy 2013: 4; Radimilahy and Crossland 2015: 502). Radimilahy argues that Mahilaka succeeded thanks to "its rich natural environment… [,] favourable climate", access to maritime exchange networks and wide regional access (2017: 285). Outbound trade from Mahilaka likely included cattle, gum copal, worked glass goods, gold, worked and unworked iron, rock crystal, timber, worked chlorite schist vessels, and enslaved peoples (Radimilahy 1998: 32; 2013: 5). However, Mahilaka's ties to Indian Ocean monsoon networks, to the Persian Gulf, and to Swahili traders are more immediately apparent in the site's imports. Trade goods came primarily from the Islamic world and East Asia. Upwards of 70% of imported pottery excavated at the site is of Islamic origin. Meanwhile, chemical/typological analysis of trade beads, primarily found in later occupation phases, demonstrate significant ties to the eastern African system (Robertshaw, *et al.* 2006: 94, 108). Fragments of East Asian vessels such as 12th century white porcelains, 14th century Longquan celadons, and 15th century green glaze wares were recovered as well (Dewar and Wright 1993: 433).

Constructed prior to the settlement's peak, Occupation Unit *IIa*, the early 12th century mosque at Mahilaka is the oldest known Islamic structure in Madagascar (Radimilahy 2017: 287). However, the current visible mosque remains are that of a 1940s reconstruction (Radimilahy 1998: 11, 198). Charles Poirier had the mosque's *miḥrāb* reassembled, using concrete and other non-traditional materials, for his plantation's local workforce (Dewar and Wright 1993: 433; Radimilahy 1998: 11; Chantal Radimilahy *pers. comm.* 10 September 2018). It is unknown whether the current layout of the mosque mirrors that of the previous building. Butchered faunal remains of *ḥarām* species, pig and tenrec, were recovered in the earliest archaeological contexts at Mahilaka up into Occupation Unit *IIa* (Radimilahy 1998: 196) This evidence might indicate that the town was not Muslim at its inception, Islamising sometime before the construction of the site's mosque in the 12th century and housing a religiously heterogenous community for over a century after (Radimilahy 1998: 195, 198).

Mahilaka declined substantially by the end of the 15th century in opposition to the general trend seen elsewhere in northern Madagascar in the century (Radimilahy 2013: 6). It is possible that the growth of competing Malagasy towns with access to

Indian Ocean trading routes, i.e. Vohémar in the northeast and Langany and Kingany in the west, contributed to Ampasindava Bay's diminishing influence in the latter half of the second millennium (Radimilahy 2013: 6; Radimilahy and Crossland 2015: 504). Radimilahy suspects that "over exploitation,… natural environmental changes, a scarcity of possibilities," plague, and possibly even flooding episodes played into Mahilaka's gradual decline (2017: 288-289). Environmental changes at the site could have been in part a consequence of extensive rice cultivation around Mahilaka, which potentially destabilised local soils resulting in the silting of the harbour seen today (Radimilahy and Crossland 2015: 504).

2.E.*III*.b. Nosy Makamby (Lat. 15˚42'48'' S ; Long. 45˚54'11'' E)

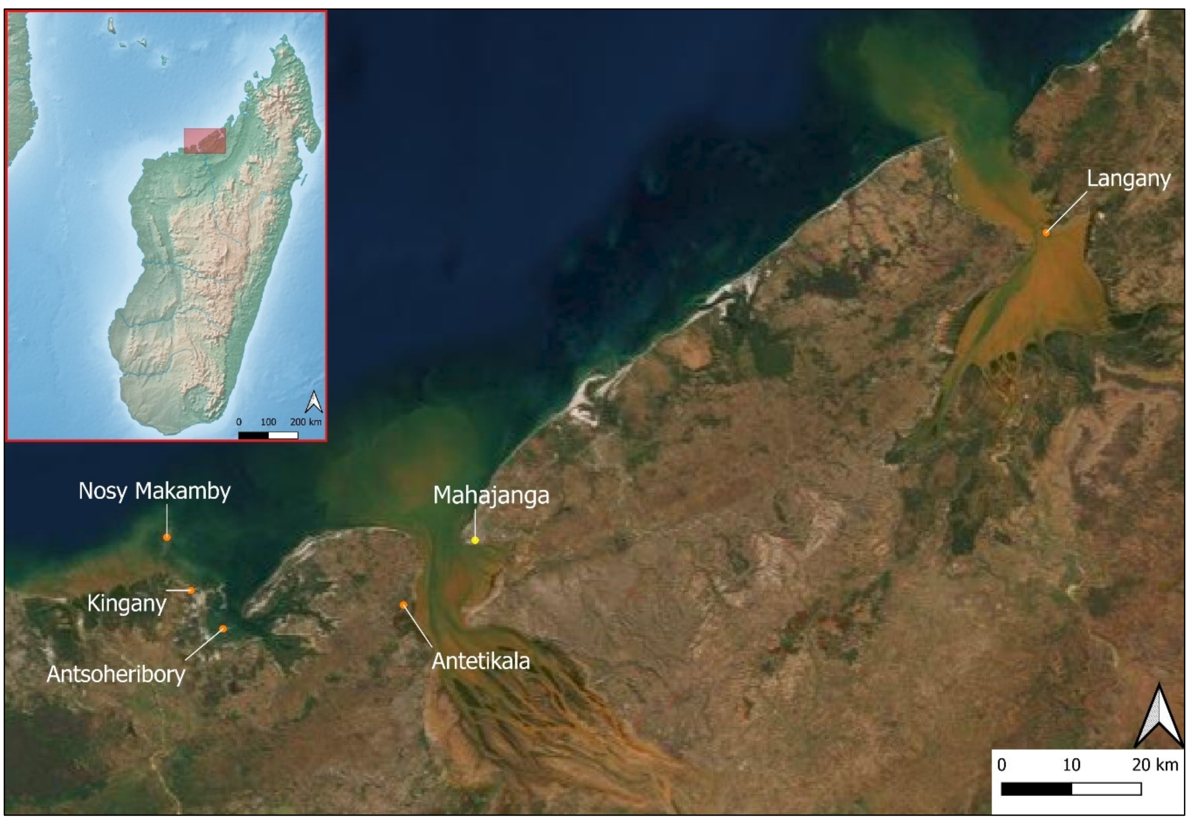


Figure 2.15: Select Malagasy archaeological sites dating to 1000-1500 AD, part 2.

Cultural remains on the island of Nosy Makamby, located ten kilometres northwest of Boeni Bay, were first recorded in 1822 by Captain Owen and Boteler, who noted a stone building on a prominence which they attributed to Arab colonists (Figure 2.16) (Owen 1833: 131; Vérin 1986: 159). The island was visited again a few years later by the French explorer Captain Charles Guillain, an expedition which produced an ethnographic record for Boeni Bay. The oral traditions recorded by Guillain chronicled the journey of an Antalaotra group, led by the patriarch Kambamba, south from a Bombetoka Bay settlement, in the proximity of the modern-day city of Mahajanga, to Nosy Makamby (Guillain 1846a; Vérin 1986: 156-157). The Antalaotra claim to have travelled from Persia via the Comoros, establishing settlements on the northwestern Malagasy coast along the way (Vérin 1986: 157). This group

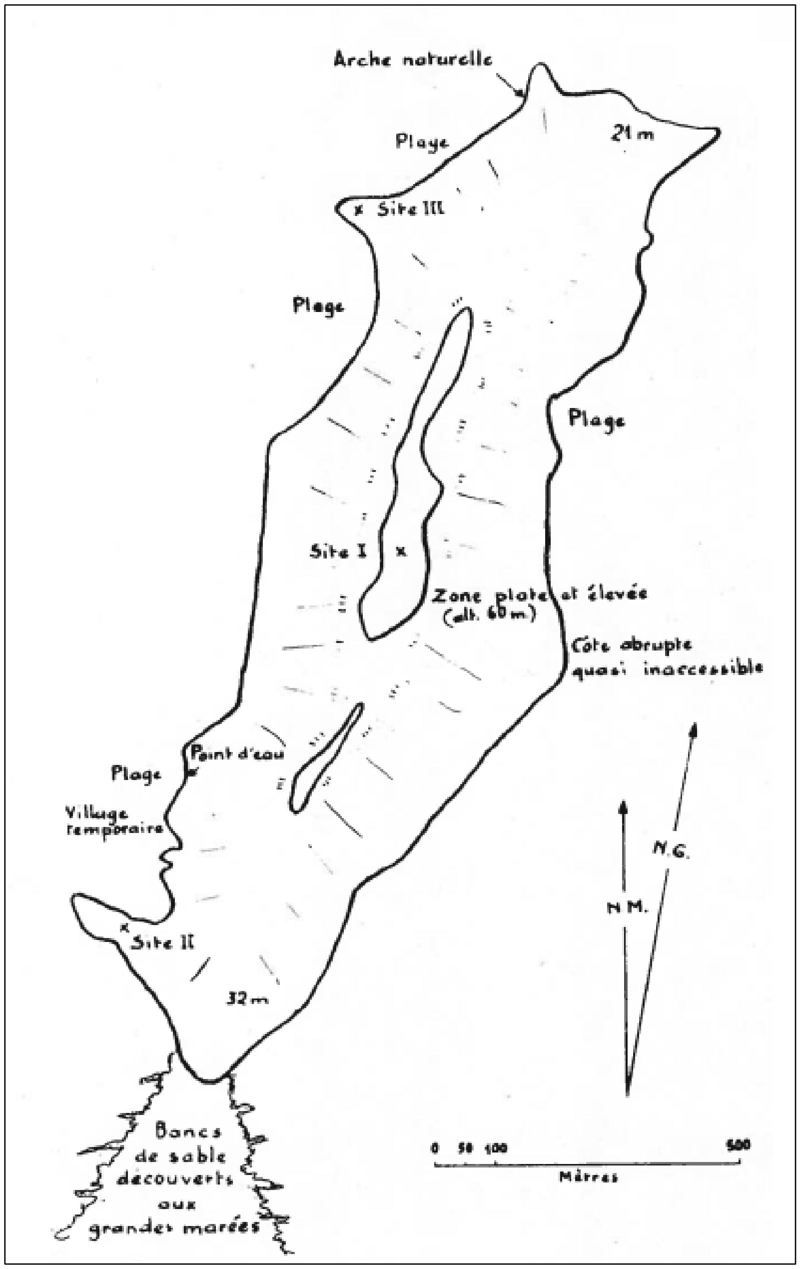


Figure 2.16: Site map of Nosy Makamby, Vérin 1986: 158.

reportedly encountered the Vazimba, an extinct pygmy people or potentially mythical culture from the deep past, who came from Mozambique or Southeast Asia (Razafimahazo 2020; Vérin 1986: 157). Once Nosy Makamby was established, Kambamba's son, Amadi, left founding villages along the Madagascar mainland, including Kingany (Vérin 1986: 157).

The site would not be visited again until a 1913 expedition by Walter Kaudern who mapped and photographed the archaeological structures (Figure 2.16) (Vérin

1986: 159). The only academic examination of Nosy Makamby was a limited archaeological campaign conducted by Vérin in the 1960s (1986: 159). Vérin proposed a 17th-18th century date for the observable ruins at Site I, located atop the highest point of the island, theorising that the unusual building was an outpost of Antsoheribory (1986: 160). Sites 2 and 3, located along the northwest and southwest shores, respectively, were of a 15th century origin, and might have served as auxiliaries to Kingany, only 5 km away (Vérin 1986: 161). The sites have a combined total of eight limestone tombs with dressed coral accents (Vérin 1986: 161). The design and orientation of these tombs led Vérin to conclude that they were Islamic. Unfortunately, shoreline conditions on Nosy Makamby are detrimental to the preservation of lime-bound architecture, and all eight tombs have significantly deteriorated. Vérin also found weathered, dressed coral tablets lying adjacent to a tomb at Site 3 (1986: 161). These tablets are nearly identical to those observed in Kingany and thus serve as one of the primary material connections between the sites.

2.E.*IV*. Archaeological Studies on Northern Malagasy Sites, 1500-1800 AD

The site of Vohémar serves as a case study for locales established in the period of 1500-1800. These three centuries were a period of relative prosperity across Madagascar, due in part to the rise of powerful Malagasy empires, namely the Sakalava dynasties and the Kingdom of Imerina, and widespread engagement with the global slave trade (Knietz 2014). Meanwhile, Europeans entering the Indian Ocean impacted not only the entirety of Madagascar, but the whole transoceanic network (Campbell 2019: 163-166; Knietz 2014).

2.E.*IV*.a. Vohémar (In the vicinity of: Lat. 13˚21'10'' S ; Long. 50˚00'44'' E)

The necropolis at Vohémar has been suggested as material evidence of a once great urban, mercantile, and Islamic civilisation known as the Rasikajy (Dewar and Wright 1993: 444). The Rasikajy have been described as ancient “inhabitants of the northeast… who mined [and worked] chlorite schist” (Schreurs, *et al.* 2011: 1) between 1000 and 1500 (Serneels, *et al.* 2017: 111). The site is on a peninsula on the northeastern coast, in the lowlands of the Tsaratanana Massif near the mouth of the Maintialaka River (Figure 2.17) (Schreurs and Rakotoarisoa 2011: 1-2). Vohémar, mentioned in some accounts as Iharaña or Vohimarina, was documented by European explorers and merchants in the early 16th century (Schreurs, *et al.* 2011: 17). It is from 16th-17th century French and Portuguese records, i.e. Pedreanes, Thevet, Megiser, and Nicholas Mayeur, that archaeologists know that the past settlement extended onto islands that disappeared beneath large waves sometime in the late 18th century, shortly after which the town relocated to its modern-day location on the peninsula (Figure 4.19) (Radimilahy 1998: 14; Schreurs and Rakotoarisoa 2011: 14; Schreurs, *et al.* 2011: 2). Despite over a century of archaeological investigation around the necropolis, the original settlement has not been found (Schreurs and Rakotoarisoa 2011: 13).

Figure 2.17: Location of Vohémar.

The Muslim settlement of “Layrāna”, located west of “Malay” at “102° – minus a few minutes – of longitude and 0°324 of southern latitude, on a large estuary to the west of the city”, was, according to a now-lost text by Ibn Fāṭima, quoted by Ibn Saʿīd in the 13th century, frequented by ships and men from many countries (Allibert 1999; Beaujard 2019b: 380-381). Layrāna, also mentioned in the 14th century *Taqwīm al-buldān* by Abū al-Fidāʾ and a century later as Bīmārūh in ibn Mājid’s *Ḥāwiya*, is notably reminiscent of an older name for Vohémar, Iharaña (Beaujard 2019b: 380-381, 571; Freeman-Grenville 1975a: 23; Shepherd 1982). These references seem to show early Arabic-textual familiarity with the settlement, a testament to its regional importance.

The Vohémar necropolis was first identified and excavated in 1899 by Guillaume Grandidier, who noted hundreds of structures ranging from large coralline limestone tombs to simple graves (Grandidier, *et al.* 1903; Schreurs, *et al.* 2011: 2). In 1906 the French academic Maurien identified these graves as those of Islamised peoples, based on their orientation, which remains the most compelling evidence for Vohémar being an Islamic town (Dewar and Wright 1993: 444, Schreurs, *et al.* 2011: 2). Maurien transported artefacts recovered at Vohémar to the *Musée d’Histoire Naturelle* in Nîmes (Schreurs, *et al.* 2011: 2). More than 600 tombs within the necropolis were later excavated by Gaudebout and Vernier (1941), Gaudebout (1942), Poirier (1948), and Millot (1955), the data from which was not published until the early 1970s when Vérin painstakingly hunted down the archaeological finds which had been stored in multiple locations (Dewar and Wright 1993: 444; Schreurs, *et al.* 2011: 2-3). Vérin postulated a 15th century foundation for the site based on imported ceramics (Dewar and Wright 1993: 444). Vohémar was likely contemporaneous to Kingany in the west. However, poor excavation techniques, the widespread dispersal of recovered material, and lack of publications, makes the excavations from the early decades of the 20th century of little use in the production of a reliable chronology (Schreurs, *et al.* 2011: 3). Archaeological research at Vohémar was revived in the 21st century, by international teams led by Guido Schreurs (Schreurs, *et al.* 2011: 1). Modern archaeological studies are holistic in their interpretation of data but are often hindered by the quality of the previous century of research.

Variable tomb morphology at the necropolis might represent significant social stratification, possibly tied to access to imported goods (Radimilahy 2013: 6). Burials were rich in grave goods, including ceramic, chlorite schist, precious metals, glass, and bone (Dewar and Wright 1993: 444). Twentieth century researchers biased recovery to prioritise elite goods (Dewar and Wright 1993: 444). Vohémar's imported assemblage is dominated by ceramics of Chinese make, predominately from the Song/Ming Dynasties, specifically, Longquan Celadons, often found reworked into discs, blue-and-white porcelains, monochromes, and few polychrome sherds (Schreurs, *et al.* 2011: 4; Zhao 2011: 10). Most of the East Asian ceramics date to the 14th-15th centuries (Serneels, *et al.* 2017: 111). European imported ceramics were identified as well, e.g. Manises series from Spain, but exact provenance cannot be determined for most of these artefacts (Schreurs, *et al.* 2011: 8). Locally produced earthenwares were infrequently found in these burials (Schreurs, *et al.* 2011: 4). Local vessels were typically bowls decorated with "wavy-line incision[s]" (Dewar and Wright 1993: 444) and red slip reminiscent of types recovered at Irodo and Nosy Mangabe (Schreurs, *et al.* 2011: 4). Additionally, some local pottery might have been produced to mimic the shape and decoration of Persian Gulf and East Asian wares (Schreurs, *et al.* 2011: 4).

Vérin theorised that Vohémar played a central role in the production and trade of chlorite schist vessels with Indian Ocean merchants (Beaujard 2007: 26; Dewar and Wright 1993: 444). Nineteen chlorite schist quarries were identified in the Vohémar region by Gaudebout and Vernier in the early 1940s, some associated with both gold and quartz mines, raw materials that surely contributed to the settlement's prosperity (Schreurs and Rakotoarisoa 2011: 11-12; Schreurs, *et al.* 2011: 9). Schreurs argues that burial goods found in the necropolis, e.g. gold, silver, iron, chlorite schist and quartz items were produced and worked from local raw materials (Schreurs and Rakotoarisoa 2011: 13). Vohémar's decline appears to be linked to 18th century decrease in demand for chlorite schist vessels (Schreurs, *et al.* 2011: 13). While academic investigation at the Vohémar is ongoing, scholarly understanding has been crippled by early 20th century archaeological malpractice that in many ways was not dissimilar from looting.

2.E.*V*. Summary

Most of the last 100 years of archaeological research into northern Madagascar was conducted sporadically, with decades-long lulls in systematic study. Pioneering archaeological expeditions primarily sought to describe sites, determine their chronology, and map out their connections with contemporary locales. These studies, while rarely holistic, provide a critical framework from which to construct meaningful glimpses into early-second millennium lifeways in the Mozambique Channel. Similarly, recent genetic analysis has contributed substantially to the understanding of these early periods. Data shows that Austronesians came to Madagascar via the Comorian Archipelago, potentially encountering Islamic communities en route, interactions that could have produced individual conversions (Brucato, *et al.* 2018). Widespread Islamisation of ocean-focused entrepôt communities in Madagascar, however, occurred after the establishment of permanent towns on the island (Radimilahy 2017: 287). Connections between early Islamic communities and Indian Ocean trade networks cannot be overstated, especially as they represent the most prominent relationships preserved in the material record (Section 2.E.*III*.a). While chronologies of better-researched Malagasy sites might put forth a timeframe in which Islamisation occurred within a community, they rarely elaborate on the mechanisms which prompted conversions, or the nature of the faith expressed, both topics pertinent to this thesis. This study aims to build upon the recently expanded understanding of northwestern Madagascar and its role in the Indian Ocean sphere.

2.F. Conclusion

Having briefly touched upon the history of Islamic Archaeology outside of the Arabian Peninsula, specifically outlining the historiography of frontier spaces, Islamisation, and syncretism (Section 2.B), and reviewed key archaeological literature for early Islamic settlements in coastal Mozambique (Section 2.C), the Comorian Archipelago (Section 2.D), and northern Madagascar (Section 2.E), it is clear that there are gaps in understanding with regards to the Islamisation of the Mozambique Channel. Research density and publication availability directly influenced which locations were selected by the author in Mozambique (Section 3.B) and Madagascar (Section 3.C) for pedestrian reconnaissance and ultimately subsurface investigation (Section 3.C.*II*). Kingany Site II served as an ideal candidate for subsurface scrutiny based on its associated historical record, density of standing architecture, and relative dearth of prior archaeological excavation (Dewar and Wright 1993: 442; Vernet 2009: 42). Methodologies employed for the material inspection of Islamisation within this thesis built upon the work of previous archaeologists in the region, e.g. Vérin (1986), Dewar and Wright (1993), Horton (1996$_b$), Radimilahy (1998), Serneels (*et al.* 2017), and were shaped by conceptual frameworks explored by Insoll (2001 and 2017), Eger (2019), and Peacock (2017). Such studies were essential for establishing a general comparative dataset by which to complete artefact interpretation with key research questions in mind, namely chronology, mercantile connections, and Islamisation patterns (Chapters 4 and 5). Fieldwork settings, methodologies, and observations are described in Chapter 3.

Chapter 3. Field Survey and Excavations

3.A. Introduction

Having introduced the primary project locations of Cabo Delgado (Sections 2.C.*III* and 2.C.*IV*) and northwestern Madagascar (Sections 1.F and 2.E.*III*) as well as reviewed the relevant literature regarding early Islamic settlements in the Mozambique Channel (Chapter 2), the following sections will present the environmental setting, methodology, and fieldwork specific details for the archaeological surveys (Mozambique and Madagascar) and excavations (Madagascar) completed for this study. This chapter does not provide complete tallies or analysis of artefacts observed and collected, as this is discussed at length in Chapter 4, but instead describes surface level site conditions of visited locales and expounds the archaeological stratigraphy of Kingany Site II.

3.A.*I*. Environmental Setting of Fieldwork

The following section briefly introduces the natural regional setting of the two principal fieldwork areas explored in this thesis, those being Cabo Delgado, Mozambique and Boeni Bay, Madagascar. Note that this section exclusively discusses extant flora, not archaeobotanical finds.

3.A.*I*.a. Cabo Delgado

The gentle slope of the Mozambican coast in Cabo Delgado, rarely exceeding 50 m above sea level in the littoral zone, has an underlying basement of early Cenozoic sandstones, conglomerates, and marls (Figure 3.1) (Cabo Delgado Biodiversity and Tourism LDA 2002: 8). The similarly low-rising Quirimbas Islands which parallel the coastline are stabilised upon coralline limestone bedrock (Cabo Delgado Biodiversity and Tourism LDA 2002: 8). Red sandy sediments and black alluvial clays from the sandstone escarpment of the eastern highlands reach the coast via the Messalo River, while the Lúrio and Rovuma rivers leech the mineral-rich deposits of the massive granite inselbergs, Proterozoic plutons, and metamorphic sequences which skirt the edges of Lake Malawi (Cabo Delgado Biodiversity and Tourism LDA 2002: 8; Schetselaar, Tiainen, and Woldai 2008: 50). The narrow alluvial plains of the estuary mouths are connected by thin stretches of saline white-to-greyish sandy, coastal dunes home to many small fishing villages and few larger port settlements (Cabo Delgado Biodiversity and Tourism LDA 2002: 8).

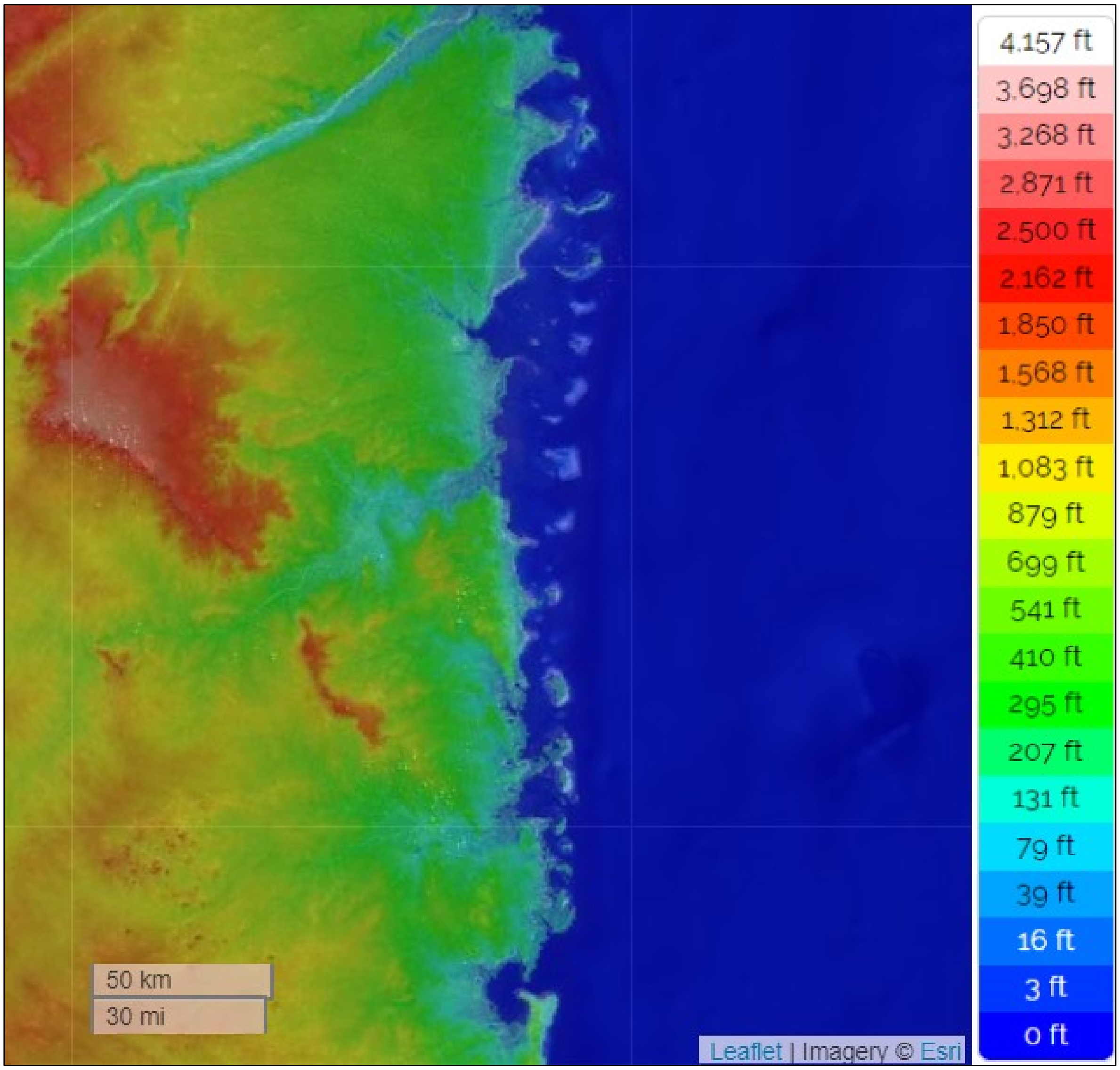


Figure 3.1: Elevation map of coastal Cabo Delgado Province.

Coastal northern Mozambique has an Aw: Tropical savanna climate according to the Köppen–Geiger climate classification system with a mean *per annum* precipitation of 882 millimetres (mm) (Climate-Data.org 2020). Rainfall occurs year-round but is most heavy during the East African Monsoons between December and April (Climate-Data.org 2020). Average temperatures fluctuate little, with annual highs of 32.1°C in March and lows of 18°C between July and August (Climate-Data.org 2020).

Coastal and island intertidal zones in the region are densely vegetated with mangroves outside of river mouths and populated areas. The largest of these mangroves stands, approximately 5,000 hectares in size, occupies fringes of the Messalo estuary (Cabo Delgado Biodiversity and Tourism LDA 2002: 9). Deciduous thickets of *Guibourtia schliebenii* (Glossy copalwood) once occupied kilometres thick bands of coastal dunes but are now only present in isolated pockets, having largely been cleared for cashew plantations (Cabo Delgado Biodiversity and Tourism LDA 2002: 9). Coastal forests, lowland dry deciduous and coastal semi-evergreen variants, occupy much of the region and represent over 60% of these ecological zones on the continent (Cabo Delgado Biodiversity and Tourism LDA 2002: 9; Timberlake, *et al.* 2011: 127). These habitats support hundreds of flora endemic to Mozambique, including *Cassipourea obovata, Dichapetalum zambesianum* (Sofala Poison-leaf), *Hexalobus mossambicensis* (Coastal Shakama-plum), *Maerua andradae* (Dwarf bushcherry), and *Vepris allenii*, in addition to other species, e.g. *Fabaceae sp., Hilsenbergia petiolaris* (Coast false puzzle-bush), *Poaceae sp.*, and lianas (Timberlake, *et al.* 2011: 131-132). Local populations, who often rely on the exploitation of these forests for food, fuel, and building materials, have drastically impacted the unprotected coastal zone, especially as development of the region expanded in the 21st century, and only limited schemes have been put in place over past two decades to better support and protect these environments (Timberlake, *et al.* 2011: 135).

3.A.*I*.b. Boeni Bay

The western shelf of Madagascar, built of underlying Mesozoic and early Cenozoic geology, gradually rises from the Mozambique Channel (Figure 3.2) (Allard *et al.* 1971: 26-33; Wright *et al.* 1996: 37). Pronounced ridges of Cretaceous limestones, approximately 40 km inland from Mahajanga, act as natural barriers guiding local hydrological activity (Wright *et al.* 1996: 38). Beyond these cliffs, the northwestern topography is predominately karstic low-lands of an Eocene limestone basement capped with alluvial fine sediments, including dolomite/stone, limestone, sand and siltstone, and other sedimentary rocks eroded from the Precambrian central highlands and western Phanerozoic sequences by the forking Betsiboka, Mahavavy,

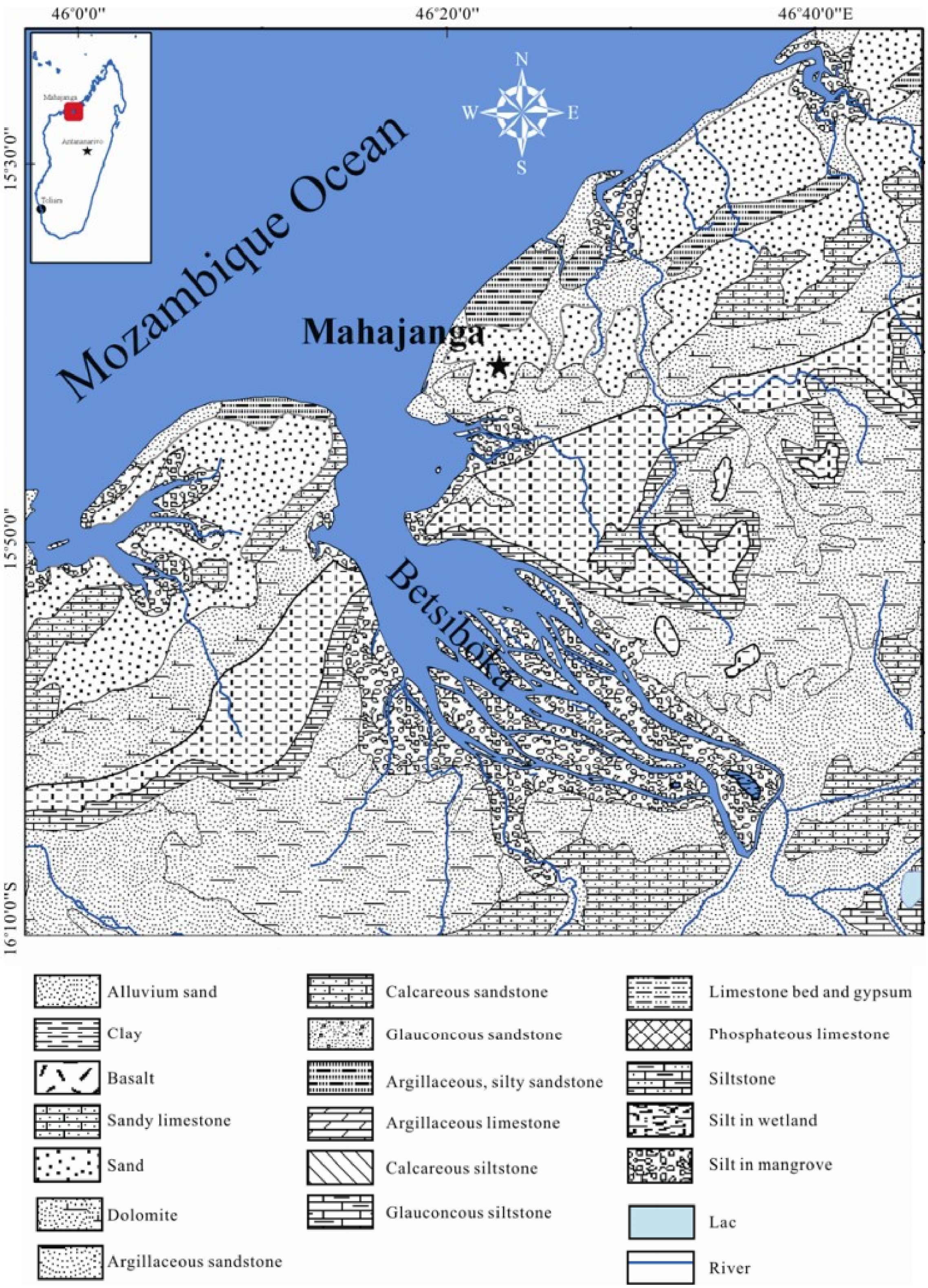


Figure 3.2: Geologic Map of Bombetoka and Boeni bays, Raharimahefa and Kusky 2010: 215.

and Mahajamba river estuaries (Figure 3.2) (Raharimahefa and Kusky 2010: 214-215; Wright *et al.* 1996: 38). Development in the region over the past four decades has drastically increased these erosion patterns resulting in deep reddish-brown deltas thick with silts and minerals, impacting the local ecosystem and economy (Raharimahefa and Kusky 2010: 222). Coral reefs cannot thrive in these sediment-saturated estuaries, but exist in extensive spans ten kilometres offshore (Wright *et al.* 1996: 38). The predominantly shallow topography of Boeni Bay presented unique challenges to the collection of relevant data in this study (Figure 3.3). The shoreline is, to a degree, inherently transient, as those soils not anchored with vegetation are consistently manipulated by ocean tides. Given that large portions of the study area have been subjected to de-vegetating human practices, slash-and-burn agricultural clearing and settlement construction, it is likely that the current shores are not identical boundaries to those of the late-first/early-second millennium (Dewar and Richard 2012; Raharimahefa and Kusky 2010: 211).

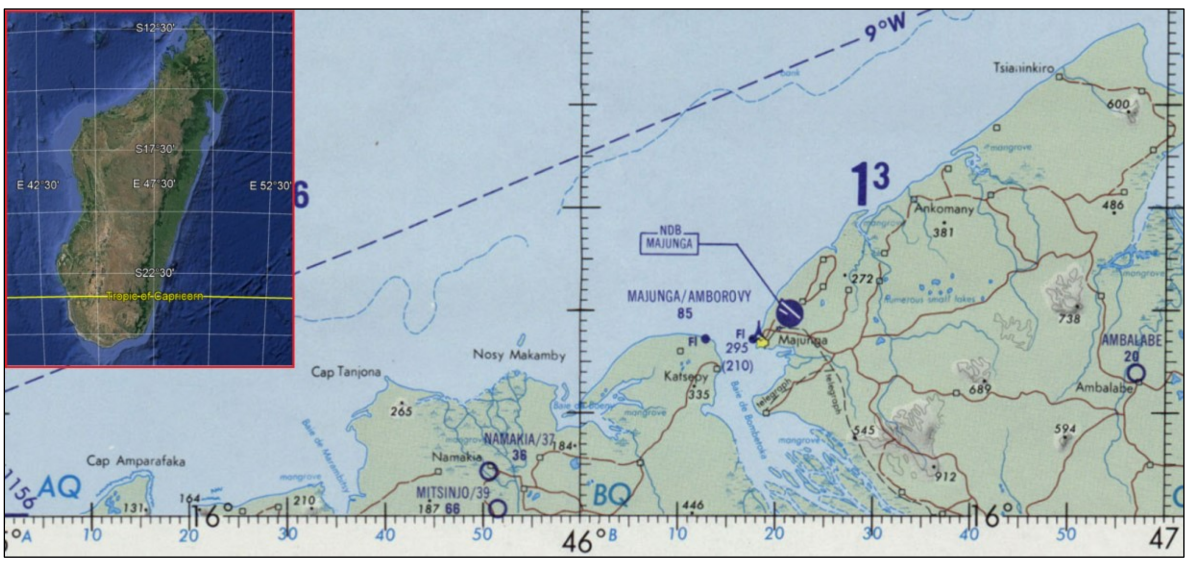


Figure 3.3: Boeni and Bombetoka bays. Long. E45˚-E47˚ Lat. S15˚-S16˚, elv. in Feet, Scale 1:1,000,000. Defense Mapping Agency Aerospace Center 1982.

Boeni Bay has an "Aw: Tropical savanna climate with dry-winter characteristics" according to the Köppen–Geiger climate classification system, average annual rainfall of *circa* 1160 mm, and a dry season between May and October (Nicoll and Langrande 1989: 51). Average annual temperatures vary between 18-33°C, with maximums typical of September-November and minimums reached in July (Donque 1975: 415-446).

Figure 3.4: Satellite imagery depicting deforestation and the settlement of Morafeno with the location of Kingany Site II indicated.

The vegetation of Boeni Bay, specifically in the vicinity of Kingany, was recorded by the author during both expeditions. However, observed flora at Boeni Aranta and Antsoheribory differed little from that of Kingany. Mangrove forests occupy the undeveloped intertidal zones of the estuaries, while the littoral, marked by undulating, stabilised dunes and low hills, is covered in *Strychnos spinosa* Lam. (Natal orange) and scattered *Medemia nobilis* Gallerand (Bismarck palm) near settlements (Figure 3.3) (Cabanis *et al.* 1969: 480-481; Wright *et al.* 1996: 38). An additional eleven species were positively identified in the vicinity of Kingany, including: *Adansonia madagascariensis* (Madagascar baobab), *Boehmeria nivea* (Ramie), *Catharanthus roseus* (Madagascar periwinkle), *Dodonaea viscosa* (Hopbush), *Ligustrum sinense* (Chinese privet), *Manihot esculenta* (Bitter cassava), *Obetia ficifolia*, and *Tamarindus indica* (Tamarind), while numerous undifferentiated grasses, *Poaceae sp.*, and legumes, *Fabaceae sp.*, were also present (Tropicos.org 2019). A majority of the standing architecture at Kingany is overgrown with lianas, Madagascar periwinkle, orchids, and smaller vines, often with large baobab and bevoa trees occupying the interior spaces of enclosures. Over 35% of the species identified at the site were non-endemic to Madagascar, e.g. ramie, a fibrous plant from East Asia, and *mahôgon dambo*, a type of manioc which evolved in South America. *Mahôgon dambo* was likely introduced by Europeans significantly after the 16th century abandonment of Kingany. Chinese privet and *Obetia ficifolia*, both of which originate in Asia but have become naturalised on Réunion Island in the last 400 years, were abundant (Tropicos.org 2019). It is probable that some of these species were brought to Boeni Bay intentionally, particularly ramie and Chinese privet which were prized for their many uses.

The village of Morafeno, Malagasy for “quick to be full”, is completely absent from Vérin’s account of Kingany (Figure 3.18). Today the aptly named village, home to self-identified Sakalava and Betsirebaka peoples, encompasses the site, encroaching predominantly via forest clear-cutting on the east and west flanks of the central, stabilised dune (Dezy *pers. comm.* 20 May 2019). The primarily Muslim Sakalava population has lived at Morafeno since its inception, approximately three generations, while the Christian Betsirebaka group, migrants from southeastern Madagascar, arrived in the village following the 2016 closure of a sugar factory in the neighboring town of Namakia (Dezy *pers. comm.* 20 May 2019). This population influx has concentrated near Kingany Site I, dividing Morafeno into an older Muslim west and a Christian east (Section 3.C.*I*.b). All but the most-wealthy residents of the village live in single room rectangular "pole-frame houses with walls of reed mats, woven palm or wattle-and-daub" (Wright *et al.* 1996: 38-39). The removal of "anchor trees" for the construction of homes, charcoal production, and associated destabilising activity at the site certainly accounted for the few significant instances of change between Vérin's and this study's expeditions (Figure 3.4).

3.B. Mozambique

Two archaeological reconnaissance surveys were conducted by the author in 2018, the first of which focused on northern coastal Mozambique. The Mozambican sites of Ibo, Matemo, M'buizi, Mozambique Island, Quisiva, and Tungi were visited by the author with the permission of Hilário Madiquida and Ricardo Duarte of the *Departmento de Arqueologia e Antropologia* at Eduardo Mondlane University (Anderson 2019).

3.B.*I*. Survey

Fieldwork, taking place between 31 March and 12 April 2018, took the form of non-intrusive site visits by the author. Archaeological sites were "located with the aid of a Global Position System (GPS) receiver and coordinates obtained from published reports, when available" (Anderson 2019: 58). An informal survey of each locale was conducted, noting artefacts, features, and structures. No artefacts were collected from visited sites as was stipulated by the letter of permission issued to the team by Madiquida and Eduardo Mondlane University. Similarly, the lack of a formal archaeological permit prevented detailed mapping of cultural resources with the aid of instruments, other than a handheld GPS receiver.

During the Mozambique reconnaissance campaign, observations of encountered artefacts were noted, including tallies reflecting surface assemblages and concentrations, and select general characteristics (Section 4.B.*I*). As the survey area was swathed in nearly ubiquitous vegetation, in some instances grasses reached a metre in height (Figure 3.5), transects were only completed where feasible. Photography at the sites took one of three forms (from least to most specific): subject overview with focal direction and scale indicated, plan view approximating a bird's-eye view of the subject with scale indicated, and detail view which depicted an individual artefact or attribute of an archaeological feature.

Figure 3.5: Photograph of M'buizi village boundary.

Fieldwork began in the southern Quirimbas Islands, namely: Ibo, Matemo, and Quirimba islands, while the latter half of the expedition was conducted on Cape Delgado east of Palma (Figures 3.6 and 3.8). Reconnaissance of these islands relied heavily on archaeological reports and maps produced by Duarte (1993), Madiquida (2007), and the multi-institutional Spanish team detailed in section 2.C.*I* (Torres, *et al.* 2016). Sites located on Cape Delgado, those being M'Buizi 1 and 2, *Mesquita*, and Tungi 1 and 2, were located with and compared to descriptions found in Adamowicz 2012.

The following sections detail all archaeological sites visited during the northern Mozambique expedition. Most of these were large and possessed dense surface artefact concentrations, the interpretation of which were hindered by the fact that previously published site reports, especially for Islamic settlements, in the Quirimbas

Archipelago were generally vague. Low-resolution maps and the absence of reliable GPS coordinates prompted the frequent use of context clues as well as the advice and guidance from local people to determine whether the team was within a site. Additionally, archaeological site boundaries were rarely defined in an accessible manner. Thus, cultural material was assumed to be within an existing site boundary unless conspicuously absent from existing records and/or positioned a distance of more than 100 m from previous documented architectural features.

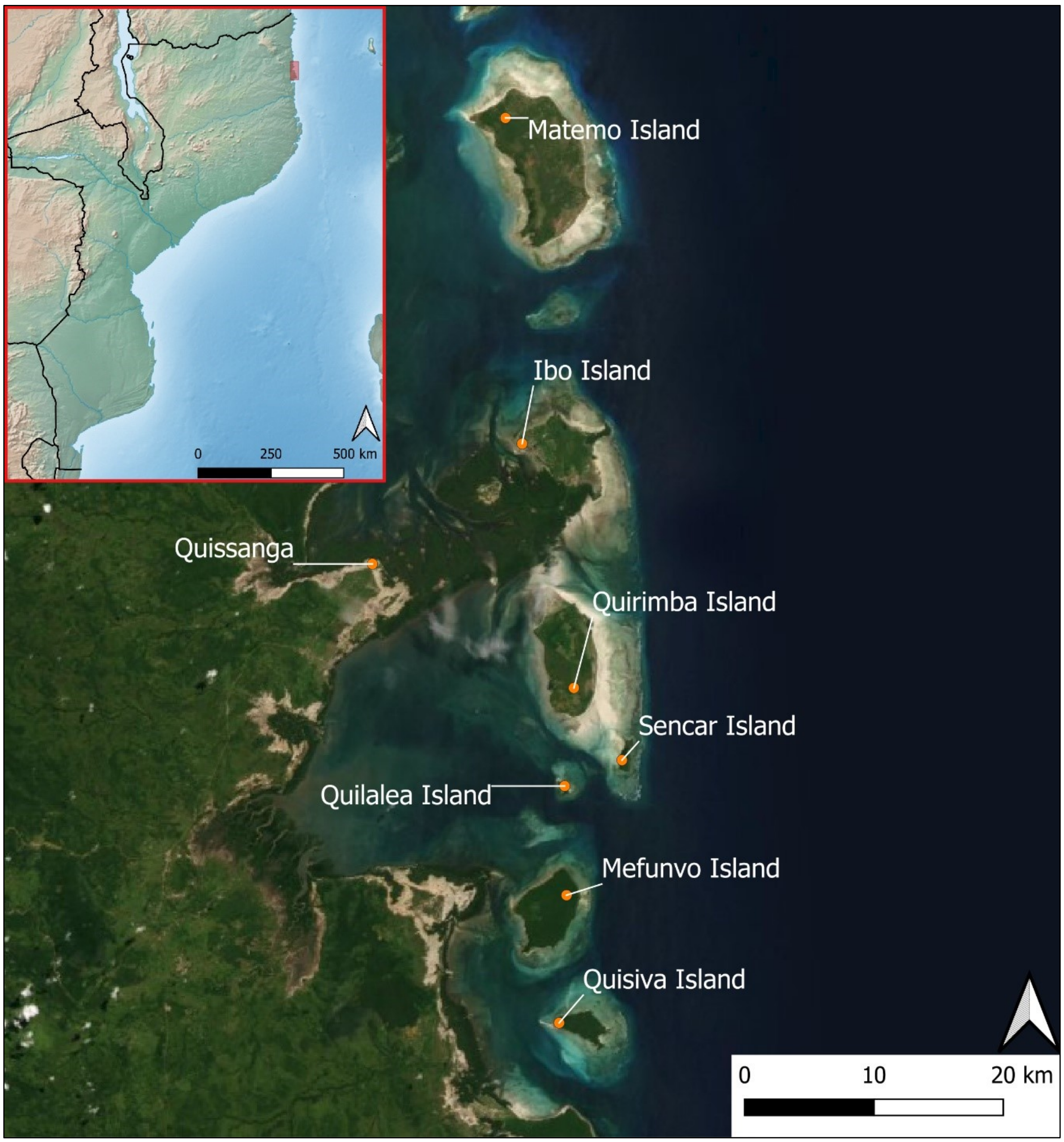


Figure 3.6: Map of the southern Quirimbas Archipelago.

3.A.*I*.a. Ibo Island

The reconnaissance of Ibo Island by the author in spring 2018 prioritised the intertidal zone, specifically that which bordered the developed western end of the island, archaeological sites near the port, and a collection of artefacts detailed in Stephens 2006 (Section 4.B.*II*.a) (Stephens 2006; Torres, *et al.* 2016: 59). This artefact assemblage was gathered in 2006 and 2007 during excavations in the vicinity of the *Fortaleza São João Baptista* (built 1781), and the *Igreja de Nossa Senhora do Rosaria* (built in the early 19th century) and is discussed in Section 4.B.*II*.a.

The intertidal zone was rich in imported East Asian and European porcelains and ceramic stonewares. The author noted a general absence of locally produced ceramics during this survey, almost certainly a result of preservation bias in a saline environment. Samples collected from the intertidal zone were not in their primary depositional environment, and had likely moved considerable distances since they were initially discarded. However, the presence of key imports were still useful in tentatively positioning the assemblage chronologically (Section 4.B.*II*.a).

The town immediately around the harbour was primarily composed of colonial Portuguese buildings in various states of ruin adjacent to more recent constructions towards the interior and northern end of the island. A 2016 field report (Torres, *et al.*: 60-61) briefly mentions two archaeological sites and surface level ceramic scatters, near the interior and south of the island, but the lack of detailed maps and extremely inclement weather prevented the team from visiting these. No precolonial architecture, aside from a handful of questionable low-rising foundations, was identified on the island by the author.

3.B.*I*.b. Matemo Island

This multi-component archaeological site is located one kilometre west of a present-day fishing village on Matemo Island. The visible portion of the complex is contained within the grounds of the now defunct Matemo Island Lodge, on the western shore of the island. Standing archaeological architecture, both Swahili and Portuguese, is visible amid the cabanas and boardwalks of the lodge. It appears that the Matemo

Island Lodge purposefully integrated archaeological architecture into its campus plan, directly and negatively impacted the preservation of the ambient material culture (Anderson 2019: 62). Given the proximity to the architectural remains and the dearth of surface artefacts encountered during the reconnaissance, it appears that the operators of the lodge and its visitors collected, displaced, or destroyed the portable cultural heritage on the island. No surface artefacts were encountered, with a singular exception discussed below.

Figure 3.7: Ruins of Matemo mosque, Anderson 2019: 74.

A cluster of at least two low-rising, rectangular, coralline limestone Swahili-style tombs, likely no more recent than the 16th century given that the island was the target of a series of punitive missions in that century, a distinctly Christian, Portuguese graveyard, and the ruins of a mosque (Figure 3.7) were also visited (Santos 1609: 274; Torres, *et al*. 2016: 61). A plan of the mosque from Torres, *et al.* 2016 (Figure 2.4) shows that a *minbar* bisects the *muṣallā*, prayer hall. The positioning of the surviving *miḥrāb* might indicate that there was once a second, symmetrical *miḥrāb*, east of the *minbar*. Mosques with twin *miḥrāb*s do appear elsewhere in East Africa, such as the *jamia* mosques of Mogadishu and Ungwana, Lamu, and a recently excavated example in Zeyla, Somaliland (Garlake 1966: 144, 185; Insoll 2020: 431).

The surviving *miḥrāb* had been receiving libations in the form of coffee, tea, incense, and other perishables for many decades. A dozen incense sticks, nearly 20 small porcelain teacups, 6 ceramic coffee mugs, 2 small porcelain bowls and saucers, and 5 glass jars were observed in the niche (Figure 3.7). However, all of these items were no older than the early 20th century, despite the mosque itself having been in a state of ruin for multiple centuries (Torres, *et al.* 2016: 62). An elder informed the author that the mosque belonged to the *Qadriyya* Sufi *ṭarīqa*, or brotherhood, to which the present-day village is associated, and it is possible that they recognise the location as a place of power in possession of *baraka*, spiritual grace or protection (Insoll 1999: 183). Goods appear to have been left in the *miḥrāb* niche in a reverential manner. The local significance imparted on the mosque was possibly why the *miḥrāb* was targeted and partially destroyed in early 2018 by Islamists who likely viewed such actions as *shirk*, idolatry (Anderson 2019: 75).

3.A.*I*.c. M'buizi Sites 1 and 2

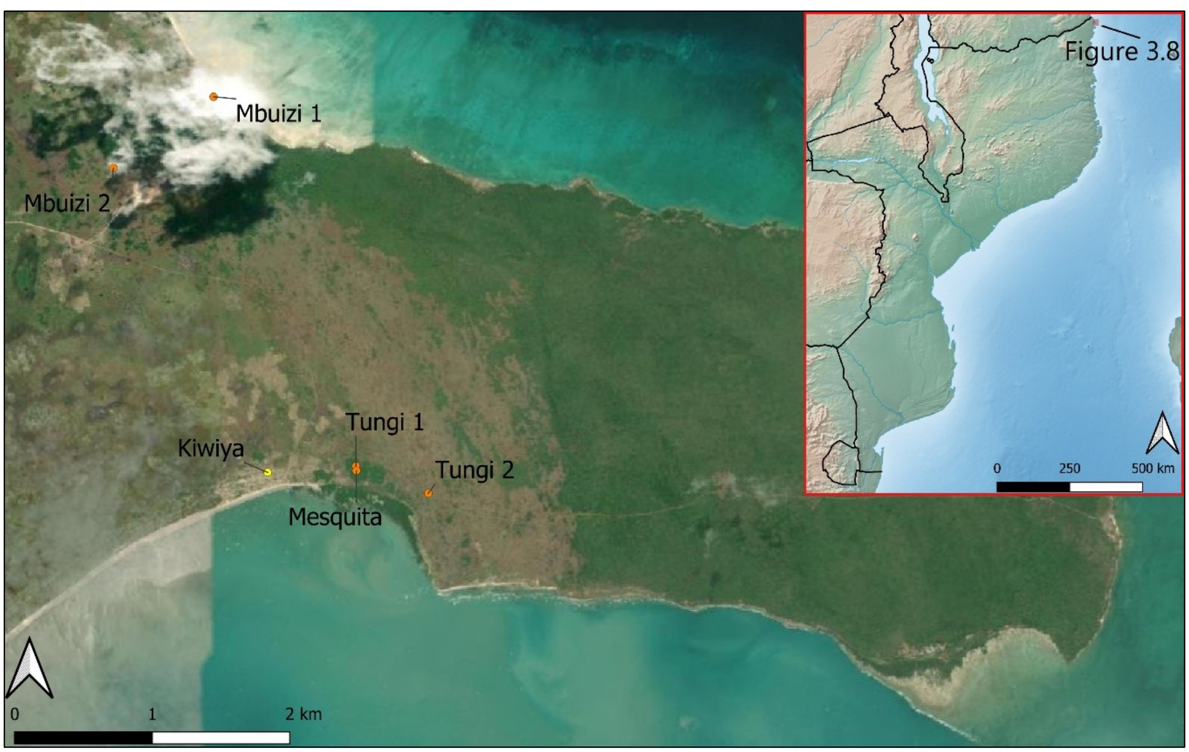


Figure 3.8: Select Cape Delgado Sites.

The archaeological sites of M’buizi 1 and 2 were located by the author using GPS coordinates provided by Adamowicz (2012: 42). Site 1, marked by a coastal tomb, approximately one kilometre southeast of M’buizi village, is referred to by the local people and tourists as the “Princess’s grave”. The name, however, is a misnomer as the tomb belongs to a *shehe*, or sheikh, though a grave of a *sulṭāna* lies just outside the enclosure (Adamowicz 2012: 23). Tombstones marking the graves were inscribed in Arabic, but were not photographed by the author at the behest of a M’buizi elder. The tomb enclosure was rebuilt in the 20th century by the Mwani people who frequent the site (Adamowicz 2012). However, the demolished remains of the previous structure were visible north of the modern retaining wall (Anderson 2019: 60). Recently lit candles and incense were viewable from outside the shrine.

Despite heavy vegetation, the team located dense surface concentrations of local ceramics in a field west of the structure. These relatively low-quality specimens were weathered, leaving their exteriors friable and matrices foliated. No decorated or imported sherds were observed in the scatter.

Surface artefacts, but no architectural remains, were found in the area of M’buizi 2, as provided by Adamowicz (2012: 42). The GPS coordinates led to a grassy field, bordered on the eastern side by forest, less than a kilometre southwest of M’buizi 1. Relatively dense surface scatters of 19th century European porcelains, primarily English blue-and-white and transferwares, as well as coarse-grained, heavily weathered local ceramics were identified.

3.B.*I*.d. Quirimba Island

No *in situ* archaeological materials were encountered during the reconnaissance of Quirimba Island (Figure 3.6), despite assistance from local villagers in conjunction with the location map featured in Torres, *et al.* 2016 (60). Previous reports said that the site is located adjacent to the shore near the southwestern point of Quirimba Island. However, when asked by the author, the local community had limited knowledge of ruins in that area. Five *porites* coral, cut living coral, blocks lining the walkway of a home in the area were observed during this visit. The team was told that these blocks were obtained from older houses in the village. Ultimately, from the information available it is unclear whether the correct location was visited by the author, though it is possible the archaeological remains documented in previous reports have been significantly overgrown and/or dismantled by the island's community.

3.B.*I*.e. Tungi Complex

The locales of *Mesquita*, Tungi 1, and 2 make up the multicomponent site of Tungi. The core of the site, defined in Adamowicz (2012: 43), contains a single-room mosque, a large palatial residence, two rectangular tomb enclosures, a length of wall, a "borrow-pit" or natural depression, and copious surface level artefacts (Figure 3.9).

Mesquita, Portuguese for mosque, is located within the core Tungi complex, approximately 500 m east of Kiwiya village and 100 m north of the shore, on Cape Delgado (Figures 3.9 and 3.10) (Adamowicz 2012: 43). At some point between Adamowicz's 2012 report and spring 2018 the building received *macuti*, woven reed and palm frond, and ablution retrofits and became an active mosque used by fishermen. Approximately 80% of the structure is still standing, though exact measurements were not taken, with the roof and portions of the eastern-most wall missing. This simple mosque was built of plastered coral and coralline limestone in an architectural style seen throughout the late 17th to mid-18th East African coast (Garlake 1966; 2002: 175). The structure appeared to have been constructed on an approximately 60-cm-high platform, with the eastern portal accessible via three broad steps. A raised rectangular ablution pool was situated adjacent to the eastern door, marking the dedicated entrance to the *muṣallā.* A separate exit was found opposite the *miḥrāb*. Mosques set on platforms are common throughout the Islamic world, including on the East African coast at sites like Songo Mnara (Horton, Fleisher, and Wynne-Jones 2017: 170). The meaning of such architectural practice varies, but by placing mosques in centralised positions and elevating their visibility it is probable that the mosque patrons sought to portray the centrality of Islam within the community (Fleisher and Wynne-Jones 2012: 178).

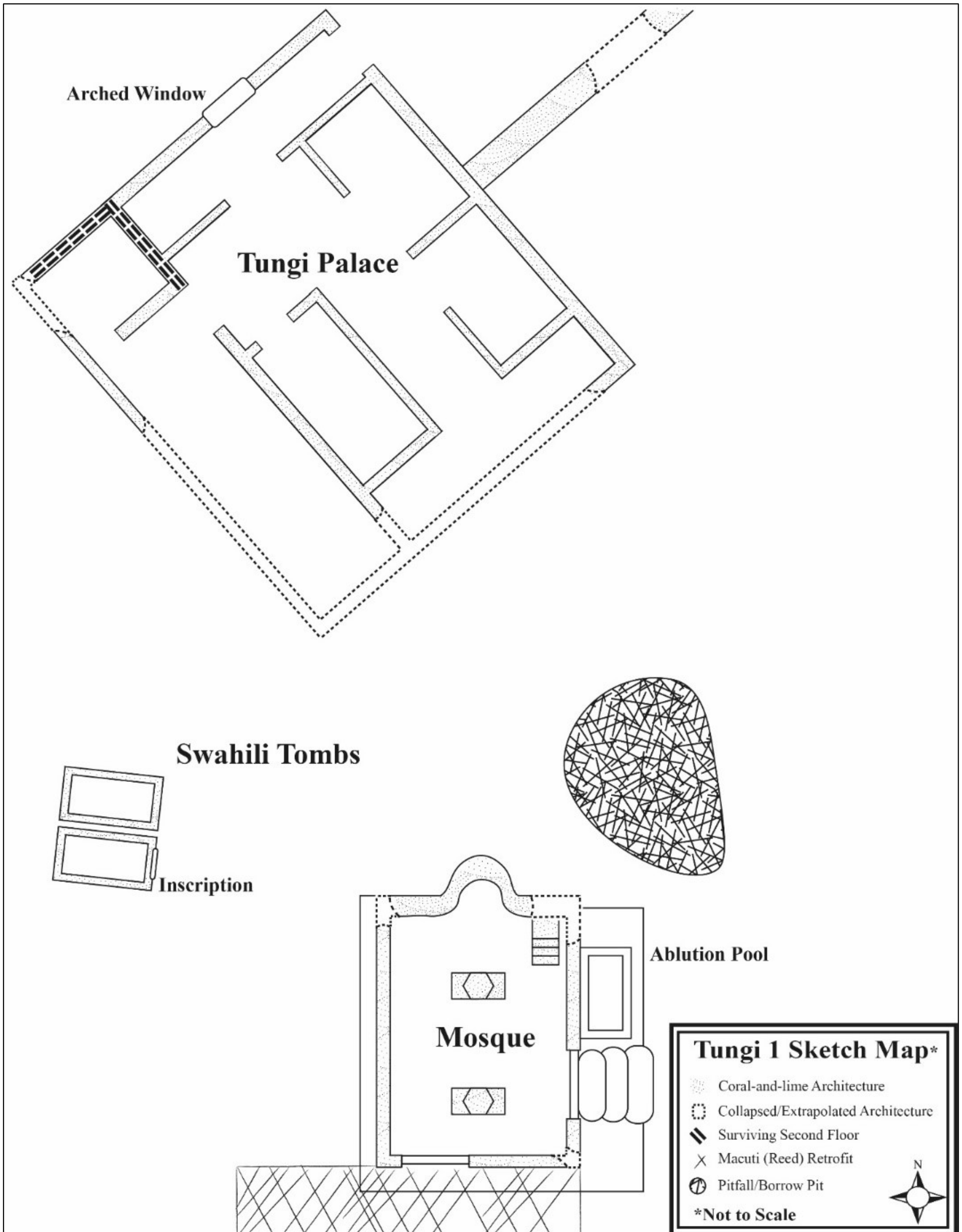


Figure 3.9: Sketch map of Tungi 1 and *Mesquita*, Anderson 2019: 64.

The *muṣallā* was bisected into two rows by pillars on short pedestals which align with the *miḥrāb*. A low, deep *miḥrāb*, approximately two and a half times wall thickness, indicated the *qibla* (Figure 3.9). From its exterior the *Mesquita*'s *miḥrāb* was rounded, like those at Matemo and Kingany (Sections 3.B.*I*.b and 3.C.*I*.b). While it is not uncommon for Swahili *miḥrāb*s to be two or more times the thickness of the *qibla* wall, such architectural features are commonly squared on their exterior (Pradines 2003: 362). The *miḥrāb* was reminiscent of the 18th century expansion of the Great Mosque of Kilwa Kisiwani (Mark Horton *pers. comm.* 17 May 2018). To the right of the niche was a short, square-stepped *minbar*.

Two rectangular, *qibla*-aligned tomb enclosures, one of which had an Arabic-inscribed plaque (Section 4.B.*I*.c), were located roughly five metres northwest of the mosque (Figures 3.9 and 3.11). The nearly identical, plaster-covered tombs were decorated with stepped "four-sided pyramidal points" on their shorter ends, and shallow, squared crenellations on the longer walls (Anderson 2019: 65). Based on the inscription and the similarity between the two features, it can be deduced that the tombs date to the late 19th century (Section 4.B.*I*.c).

Figure 3.10: *Mesquita* facing southwest, Tungi.

What appeared to be a large "borrow pit", an extraction point for either clay, coral, or earth, or otherwise a natural depression was located in the centre of the

Tungi complex (Figure 3.9). The pit was not able to be directly measured, but appeared to be just smaller than the *Mesquita* and at least 3 m deep. Given that Cape Delgado is a rather homogeneous environment of densely vegetated low-rising, hills and shallow grassy basins, it is probable that the feature was man-made. That said, the team could not determine whether this pit was a recent construction or the remains of an archaeological feature.

The palatial residence at Tungi 1 (Figures 3.9 and 3.12) was constructed of a combination of rounded rock, rough coral, and coralline limestone, held together with lime or gypsum mortar, with some *porites* coral accents. This construction style was typical of the latter half of the second millennium, and the materials used would suggest that the structure was no older than the 14th century (Garlake 2002; Pradines 2012: 139). The palace's asymmetrical internal layout might evidence a potential reconstruction and expansion, possibly in the 18th century (Adamowicz 2012: 29; Duarte 1993: 77). However, no chronologically secure archaeological sequence has been created for the Tungi complex, so these dates are speculative.

Figure 3.11: Swahili-style tomb, Tungi.

The palace consists of nine narrow rooms, connected via an axial hallway and a combination of arched and squared doorways, with one exit (Figure 3.9). A second storey was visible in the western corner of the structure and mangrove-pole fittings, seen on the southeast wall, might indicate that the building once had a more extensive upper floor. Remnants of plaster suggest that a majority of the surfaces within the palace, interior and exterior, were once covered, with at least two interior walls coated in a blue-green paint. The northwestern-most wall had a four-centred arched window with apex-nick, similar to those of Swahili doorways and windows, that opened up to the outside of the structure (Figure 5.27). This was the only window observed. No *zidaka*, wall niches frequently used for display in coastal East Africa, were seen within the palace (Meier 2009; Wynne-Jones 2016: 196).

Figure 3.12: Tungi palace facing northwest.

A wall, approximately 1.5 m tall and 30 cm wide, attached to the northeastern face of the palace (Figure 3.9). The feature had a similar, though noticeable coarser, composition to that of the palatial residence. The observable portion of the wall was approximately 50 m long, though breaks and partial collapses were observed along its length. The author was unable to determine that complete path of the wall because dense vegetation prohibited the team from walking its perimeter. Adamowicz suggests that this was a town wall, but given its proportions and what it encloses, this does not seem likely (2012: 29). The wall did not appear to encircle any part of the Tungi complex aside from potentially the northern portion of the palace. Therefore, it is probable that this was an enclosure wall, encircling the palatial residences properties.

No artefacts were encountered within 50 m of the location of Tungi 2, as defined by Adamowicz (2012: 43) (Figure 3.8). However, at least four separate coral-rubble mounds, possibly from collapsed structures, were observed along the east-trending trail leaving Tungi 1.

3.B.*II*. New Sites

The following section details two discrete locales on Cape Delgado which appeared to have been outside the boundaries of existing archaeological sites recorded by Adamowicz (2012). However, as previous archaeological reports for the cape did not clearly delineate site boundaries, the relationships between the concentrations described below and other sites in the vicinity can only be assumed.

3.B.*II*.a. “Kiln Site”

A dome-like, archaeological feature constructed of coral-and-lime was encountered in a field roughly 200 m west of Tungi 1 (E 040˚ 35.065ˈ, S 10˚ 41.285ˈ). The feature, which measured 60 cm in diameter, 50 cm in height, with a 10 cm diameter opening at its zenith, was positioned along a collapsed wall of similar material (Anderson 2019: 67). The characteristics of the ruin were most akin to those of a small kiln. Additionally, wall remains in the area belonged to at least two stone structures whose exact boundaries were not definable without excavation. These structures were not listed by Adamowicz (2012). The dome-like structure was destroyed by unknown individuals two days after it was initially documented by the team (Figure 3.13).

Artefacts encountered in the vicinity of the architectural remains were exclusively locally produced, reddish to dark brown ceramic sherds. Duarte suspected that these sherds were of early 20th century origin based on photographs shown by the author, thus postdating the collapse of the Tungi Sultanate (Section 2.C.*IV*.a) (Ricardo Duarte *pers. comm.* 16 April 2018).

Figure 3.13: Dome-like feature before and after vandalism, Anderson 2019: 75.

3.B.*II*.b. "Turtle Bone Site"

A concentration of local ceramics, identical to the forms observed throughout the Tungi complex (Section 4.B.*I*.a), together with approximately 20 turtle/tortoise shell fragments, was found 100 m north of the "Kiln Site" and west of Tungi 1 (E 040˚ 35.084' , S 10˚ 41.258'). While this archaeological concentration was separated by dense vegetation from all architectural features in the Tungi complex, it is likely that the remains belonged to a component of the settlement. It is difficult to determine the exact nature of the locale without subsurface investigation, but based on the location of the remains and the absence of standing architecture it is reasonable to suspect that these artefacts mark the location of a degraded *macuti* structure, a turtle processing locus, or a midden.

3.C. Madagascar

Two data-collection expeditions were conducted for this thesis in northwestern Madagascar. An initial survey (Section 3.C.*I*) successfully evaluated promising locales for subsurface investigation planned for the following year (Section 3.C.*II*). Site accessibility, visibility of extant architecture, cultural features, surface artefact compositions, and suspected chronology were all considered by the author when visiting the locales. Both the survey and excavation fieldwork seasons were conducted in collaboration with the University of Antananarivo and the associated *Institut de Civilisations-Musée d'Art et d'Archéologie*.

3.C.*I*. Survey

In September 2018, a survey of the northern Malagasy sites of Antsoheribory, Mahilaka, and Kingany was completed by the author. Geographic information system (GIS) software was utilised for landform data analysis so as to streamline survey route planning, and for post-survey data scrutiny. Systematic transects were employed during the pedestrian survey when possible. Surface level examination of the ruins in Boeni Bay helped the author to determine that Kingany was the locale best suited for an examination of Islamisation in the region.

Fieldwork at Kingany in May 2019 included survey in addition to the subsurface sampling and artefact recovery at Site II. GPS data of surface artefacts, anomalies, features, and landmarks was collected at this time.

3.C.*I*.a. Antsoheribory

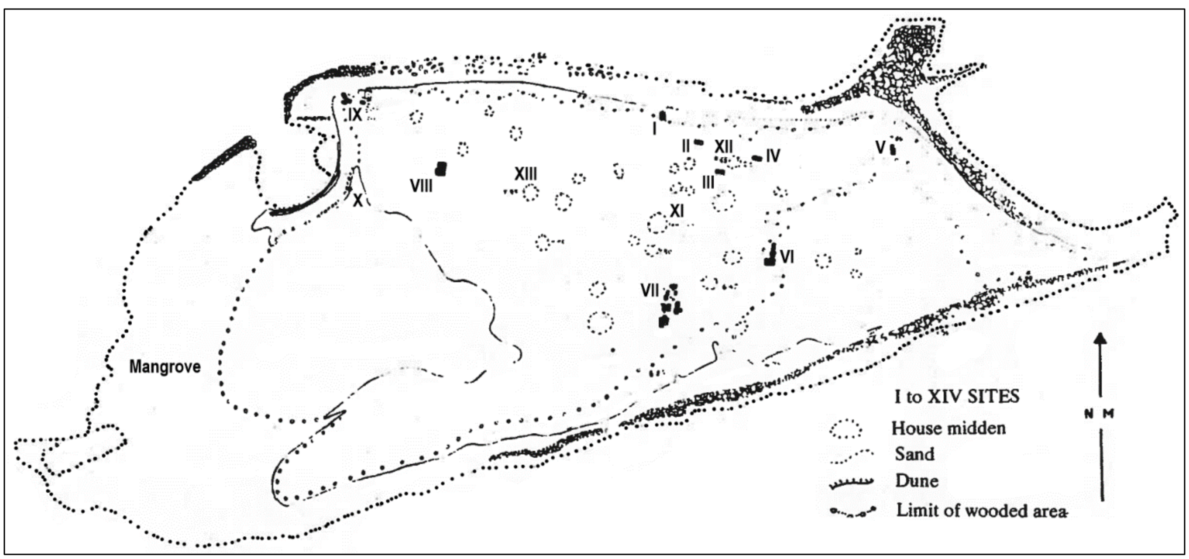


Figure 3.14: Map of Antsoheribory archaeological sites, based on Vérin 1986: 288.

Antsoheribory Island is located less than a two-kilometre sail north from the village of Boeni Aranta (Figure 2.17). Boeni Aranta caters to eco tourists coming from Mahajanga, as the market for such recreation has grown recently, and village leaders operate as stewards of the nearby site. Local oral tradition holds that

Kambamba and Manafy, legendary foundational figures for the Islamised settlements of Madagascar, are buried on the island, a claim shared with multiple other sites in the region, e.g. Nosy Manja (Vérin 1986: 295, 296).

Figure 3.15: “Winged” tomb in Antsoheribory SITE VII.

Archaeological remains were visible throughout the approximately 40 hectares site, with the densest concentrations located within the main body of the island (Section 4.C.*I*) (Vérin 1986: 290). The multi-component site has approximately 50 distinct structures divided into 14 locales (Figure 3.14) (Vérin 1975a: 351-375). A majority of the structures on the island were tombs, but there were also two residences, small out-buildings, and a single mosque (Vérin 1986: 298). The principal building materials observed were rough coralline limestone, siltstones, and coral rag almost universally dressed in lime or gypsum plaster, though arched doorways accented with *porites* coral, and fittings that once held mangrove poles for ceilings were also seen. Interestingly, trees, often baobabs, were seen growing within nearly every enclosure. While practices in which trees are planted within disused buildings and tombs have been observed in South Africa and southern

Mozambique, the Antsoheribory cases are likely the byproduct of accidental seed deposition, i.e. defecation or animal activity (Cruz 2015: 123).

Figure 3.16: Exterior of Antsoheribory Site III.

Forty-five stone tombs were located on the island, chiefly within Sites VI and VII on the periphery of the former settlement (Figure 3.14) (Vérin 1986: 293). Vérin dated the tombs to the mid-17th through the early 19th centuries, with a handful of early 20th century burials at Site IX (1986: 291). These primarily rectangular enclosures had a single portal, most often on the western face, though a minority opened to the south (Vérin 1986: 294). Arched enclosure entrances framed with *porites* coral or plaster accents were common. Seventeenth century burials, and those of presumably less-wealthy individuals, were roof-less rectangular enclosures composed of low-rising walls decorated with geometrical plaster designs, and inlaid imported ceramics (Vérin 1986: 293). However, no architectural ceramics were seen *in situ* during the 2018 reconnaissance. A second tomb tradition emerged at the site in the 18th century (Vérin 1986: 293). This monumental style included higher enclosure walls, occasional domed roofs, geometrically designed plaster became less prevalent and/or simplified, and, beginning in the mid-18th century, "winged" or step-end tombs came into use (Figure 3.15) (Baumanova 2018: 392; Vérin 1986: 293-294). The tombs of Antsoheribory, especially those with inset porcelains, recessed rectangular panels, or stepped-ends, share much in common with the funerary architecture of the northern Swahili coast (cf. Wilson 1979).

Antsoheribory had only two stone residential structures, Sites III and IV (Vérin 1986: 293). These buildings were constructed in a manner similar to that of the tombs, in the long-room style seen throughout coastal East Africa (Wynne-Jones 2013: 761). Site III, located less than 200 m inland on the northern end of the island, was a hall-like house split neatly in half by a large baobab tree (Figure 3.14). The house had at least two rooms, with two high, rectangular, slit windows on the east and west walls. The northern exterior wall had what appeared to be a pair of shallow *zidaka* each atop an equally shallow rectangular niche (Figure 3.16). The use of these features is unclear, but as the niches are shallow, it is possible that they once contained plaques that have since been removed. Site IV, located northeast of Site III, was composed of six walls outlining either two rooms or two separate structures and mounds of rubble (Figure 3.14). It is likely that Site IV was two separate homes, as opposed to one large dwelling, as there was an approximately 50-cm-wide gap between the centre-most walls. The dearth of stone houses in what was certainly a dense urban settlement suggests that much of the town would have been impermanent, perhaps *macuti* and/or wattle-and-daub, structures.

Figure 3.17: Green-glazed polychrome sherd, 15th-17th century Persian Gulf.

Antsoheribory's only stone mosque, Site I, was located immediately adjacent to the northern shore (Figure 3.14). This 17th-18th century building appeared to have been constructed using methods and materials similar to those of the earlier tombs on the island. *Porites* coral or moulded stucco accents on the mosque, recorded by Vérin, were not observed during the reconnaissance (1986: 291). The building appeared to have deteriorated considerably since Vérin's excavation in the 1960s (1986: 290). Much of the rectangular structure, including the *qibla* wall, had collapsed, with the exception of the eastern wall, which was partially supported by a baobab tree. The western wall, approximately a half-metre tall, had a nearly two-metre break at its midway point. This gap was mirrored on the eastern wall, possibly indicating that these were once doorways. Previous reports spoke of a southern doorway arch, but this was not observed during this visit (Vérin 1986: 290). The *miḥrāb*, of which less than 50% was still standing, had a squared external wall, was plainly decorated and roughly two times the thickness of the *qibla* wall. In 1898, an excavation of the *miḥrāb* by A. Jully uncovered an upturned vessel that contained iron fragments and the remains of a child beneath, the significance of which remains unknown (Jully 1898: 441).

Surface concentrations of ceramics were observed across the island (Section 4.C.*I*). However, only two pieces of imported ceramics were encountered, those being a green-glazed polychrome sherd (Figure 3.17), and a fragment of blue-and-white Chinese porcelain (Section 4.C.*I*).

3.C.*I*.b. Kingany

Kingany is composed of three distinct concentrations of structures, designated Sites I-III (Figures 3.18, 3.19, and 3.20), a majority of which were within the coastal village of Morafeno. The team was escorted during their initial visit by two Morafeno elders and were permitted to view a pillar tomb (Site III Tomb 3), the southern mosque (Site II Building 28), a possible *madrasa* (Site II Building 32), and various tombs in Site II (Figure 3.20). No artefacts were observed at either site during the 2018 reconnaissance, likely a result of the nearly complete foliage cover at surface level. Site I (Figure 3.19) was not visited by the author during the reconnaissance at the behest of Morafeno village elders, but was thoroughly recorded during the 2019 excavation. The latter survey brought about the addition of five new structures to Site II, numbered 32-36.

Figure 3.18: Overview map of Kingany.

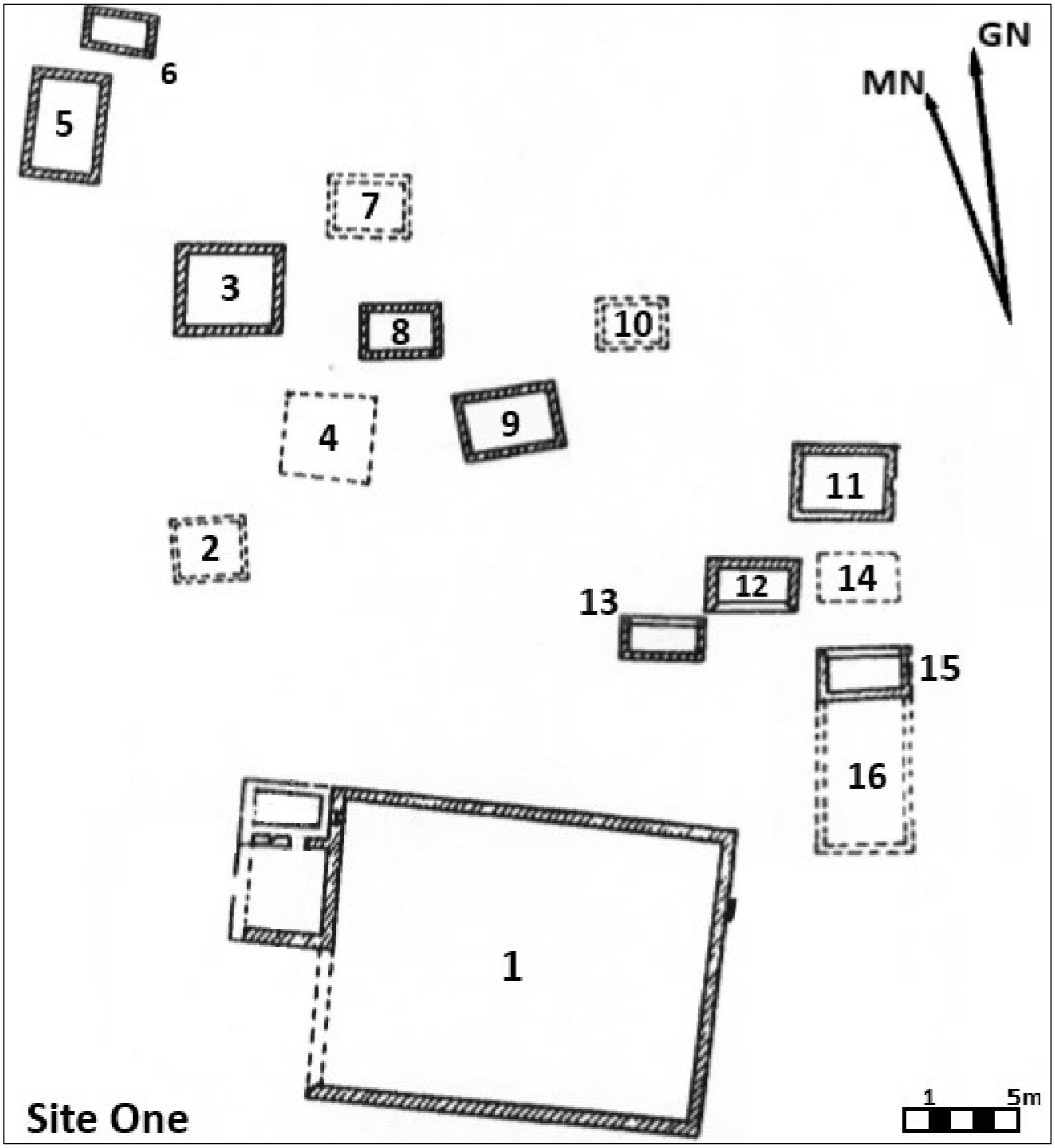


Figure 3.19: Simplified plan of Kingany Site I, based on Vérin 1986: 162.

Site I, located east of Morafeno village amid dense vegetation, is comprised of 15 rectangular stone tombs, two of which are conjoined, and one residential structure with walled enclosure (Figure 3.19). The two-chambered house at Site I, Building 1, was constructed with large cobbles of coral rag, limestone, and lime mortar and plaster. The surviving walls rose up to 1.5 m. The northwestern room, excavated by Vérin, contained large fragments of a 13th century Martaban storage vessel (1975a: 300-302). All tombs at Site I were constructed of beach rock, rough coral, limestone, and, in rare instances, sandstone. All structures were built using lime mortar and either gypsum or lime plaster, though the plaster had not always survived.

Site I Tomb 8 was unique, with carved coral and thick, almost concrete like gypsum plaster covering its surfaces. At least three tombs, Site I Tombs 11, 12 and 15 were once decorated with coral plates and bosses, now indicated by empty recesses (Vérin 1975a: 302-303). Only the beautifully carved coral tombstone of Site I Tomb 12 was collected by Vérin, now in the *Musée d'Art et d'Archéologie*, Antananarivo collection (Section 5.B.*I*.b.*i*). These tombs were *qibla*-oriented with their longer sides aligned perpendicularly to the north-south axis, with the exception of Site I Tomb 16 which appears to be rotated 90˚ relative to the other enclosures. An intrusive enclosure, Site I Tomb 15, superimposed the northernmost wall of Site I Tomb 16, indicating that the latter is older, a relationship made additionally apparent by their respective preservation. Thus, it is possible that Site I Tomb 16 is one of the oldest at Kingany, belonging to a period before standardisation of Muslim burial at the site, if it was Islamic at all, inferred from its stark non-conformity with the *qibla*. Overall, the deterioration of tombs at Site I appeared to be generally more advanced than those at Site II. It, however, remains unclear if this disparity was the result of age or quality of construction. No artefacts were observed at surface level.

A span of wall was located by the author west of Site I, in a field southeast of Morafeno village (Figure 3.18). The wall had mostly collapsed and formed a 10-30 cm tall, 60-70 cm wide linear mound. Visible portions of the wall were made of coral rag and limestone, with no apparent mortar or plaster. The wall trended northeast-southwest for nearly a 100 m, at which point it took an abrupt turn to the west, forming a stretch that was better preserved. Weather-worn local ceramics were visible among the wall debris, primarily on the southern side.

Site II contained dense stone ruins, which include 29 *qibla*-oriented, monumental tombs, 2 simple graves, two mosques, a *madrasa*, three houses, and two squared wells (Figure 3.20) (Section 1.F). A majority of the structures at Site II were constructed in a manner identical to those of Site I. Twenty-three of the tombs were undecorated rectangular enclosures reaching up to approximately 1.5 m in height. The decorated tombs varied widely. Tomb 7 had a finely plastered rounded arched window with apex-nick on its western wall. The exterior surfaces of Tomb 8

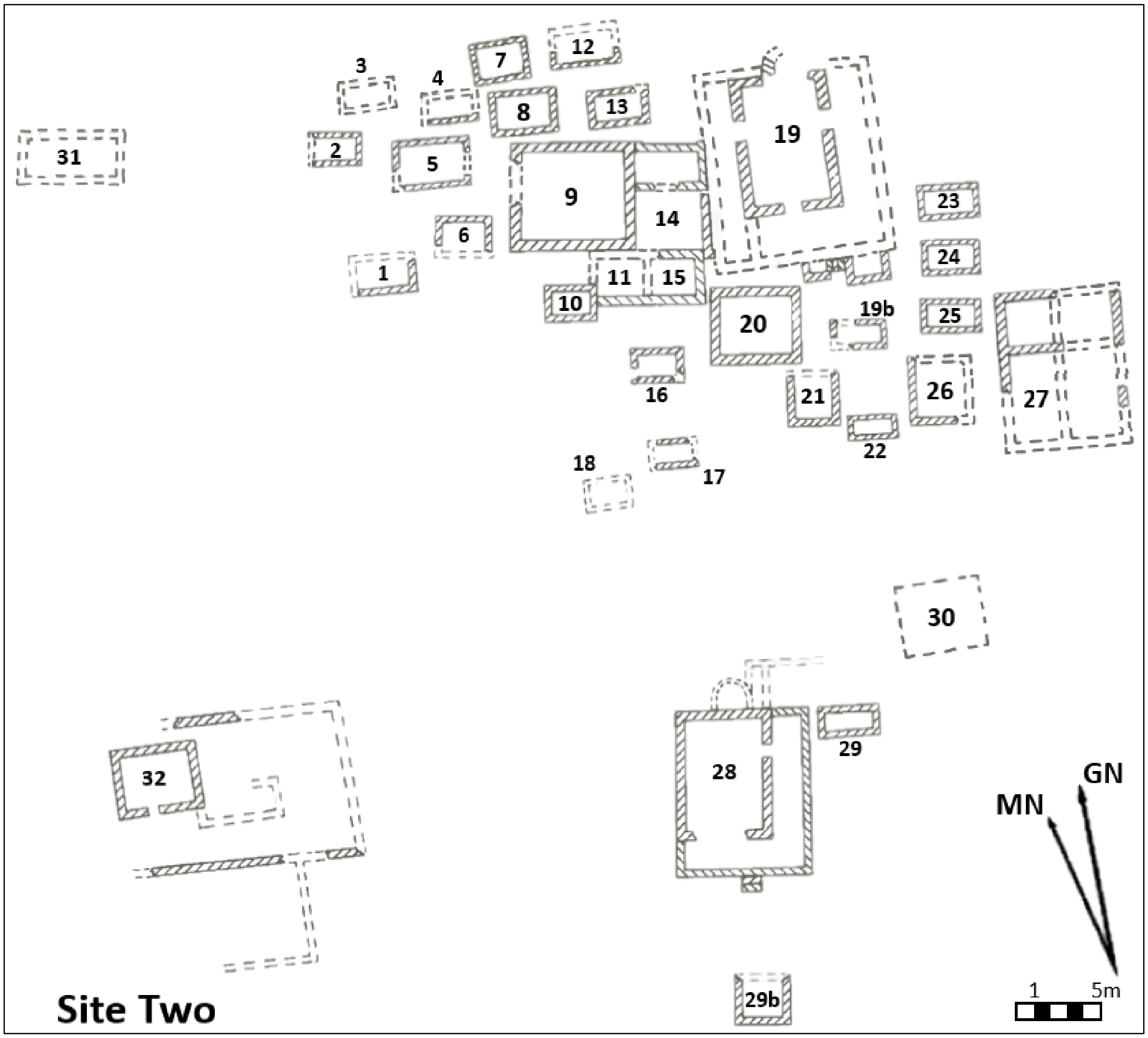


Figure 3.20: Map of Kingany Site II, based on Vérin 1975a: 304.

were decorated with stepped-rectangular recesses, topped with an inset horizontal line that circumnavigated the structure. During his excavations Vérin suspected that Tomb 8 was the oldest tomb he had encountered in Madagascar, noting that each recess of the tomb had carved coral panels, with an Arabic-inscribed plaque on each wall, two of which he collected (Section 5.B.*I*.b.*i*) (1986: 163). Vérin also reported three stone steps in the northwestern corner of Tomb 8, but these were not observed (1975a: 330). Tomb 9, the largest tomb at the site, had a doorway on its western wall and a collapsed octagonal pillar inside its enclosure. Tomb 12 had a square inset on its southwestern wall and recesses at each corner, which were once decorated with carved coral tablets and bosses (Vérin 1975a: 333; 1986: 163). The partially collapsed Tomb 13 had a cluster of five circular windows, approximately the diameter of a mangrove pole, on its southeastern end. Tomb 22 had winged, step-end, corners with pointed apexes, similar to those at Antsoheribory (Figure 3.15). Two simple graves, Tomb 33 marked by a simple enclosure of planar limestone and Tomb 34 defined by plain head and foot stones, were absent from the site report by Vérin.

Figure 3.21: *Miḥrāb* of Kingany's southern Mosque.

Buildings 19 and 28 of Site II were mosques of generally similar size, but with a 5˚ variation in orientation (Figure 3.20). Vérin had measured the interior hall of the two as "8.80 and 7.50 m long, and 6 and 5.70 m wide" roughly matching measurements obtained for this study (1986: 165). The *muṣallā* of the northern mosque, Building 19, accessible via an arched doorway in the southern wall or a simple portal in the eastern wall, was framed by a reverse "L-shaped" and a linear space. This L-shaped space, present in both mosques, was likely never fully enclosed, as the wall reached no more than 1.5 m in height, and might have served as a *ziyada* or buffer between sanctuary and outer wall. The linear room in the western portion of the northern mosque, absent from the southern mosque, had a single entrance from the *muṣallā* and was potentially for storage or private study. Corridors flanking the *muṣallā*, in this case the L-shaped corridors present in both structures and the western room of Building 19, are features associated with the coastal East Africa "Shirazi" mosque tradition, an architectural typology which describes a set of characteristics that seemingly propagated from urban, Islamic, towns of the Lamu Archipelago in the 11th-13th centuries (Ghaidan 1975: 25; Pradines 2012: 141). Despite its name, the Shirazi typology refers to locally innovated African, not Persianate, architectural forms (Wynne-Jones and Fleisher 2020). Two ablution basins were located along the southern end of the northern mosque, likely indicating that the arched doorway was the primary entrance. The *miḥrāb* of the northern mosque, of which almost nothing remained, protruded from the double-thickness *qibla* wall and was rounded on its exterior. The interior of the northern mosque was densely vegetated, disqualifying it from subsurface sampling.

Figure 3.22: Southern mosque wall niche.

The southern mosque, Building 28, was accessed via a set of approximately 20 cm tall steps on its southern end (Figures 3.20 and 3.34). An arched doorway on the eastern interior wall and a gap in the southern interior wall mark the egress and ingress routes to the *muṣallā*. Remains of plaster were visible within the mosque interior including the *miḥrāb* niche. The eastern half of the *miḥrāb* was still standing.

The niche was approximately 2.5 times the thickness of the *qibla* wall, and was likely a simple, unadorned, parabolic semidome (Figure 3.21). A shallow depression extended approximately 50 cm from the *miḥrāb* marking the location of a sondage excavated by Vérin (1975a: 305). A deeply recessed, *zidaka*-like niche was located on the eastern-most interior wall. This rectangular alcove might have been used for storing a Qur'an or other religious objects (Figure 3.22). The southern mosque had an average wall thickness of 44 cm, the northern was 52.3 cm, the mean of which exactly match the Abbasid *dhirāʿ*, or cubit (Hinz 1965: 231-232).

A complex structure of coralline limestone, rough coral, and sandstone, plastered with gypsum, located in the southwestern corner of Site II was a *madrasa* according to local oral tradition (Figure 3.20). It had at least three rooms, the innermost of which was accessed via a winding narrow corridor. The western-most intact room possessed a rectangular wall niche, much like that seen in the southern mosque, in an interior wall. Dense vegetation and an apparent local reverence for the building have resulted in remarkable preservation of the inner chambers compared to other structures at the site.

There are three stone houses at Site II and Site II *bis*, Buildings 27, 35, 36. Building 27, a narrow four-chambered structure, was built of limestone blocks and shaped coral with lime mortar and plaster (Figures 3.18 and 3.20). Vérin excavated a sondage adjacent to the northern exterior wall of the structure (1986: 165). Building 35, a two-roomed rectangular structure constructed of pinkish sandstone, limestone, and coral rag with gypsum plaster, was excavated in its entirety by Vérin (1986: 165). Vérin believed that that house was from the 15th century based on Longquan celadon within the assemblage, despite charcoal from the terminal stratum of the unit dating to *circa* 1050 AD (1986: 165). Building 36 is a roughly rectangular mound with linear piles of coral rag reaching 10 cm in places. Two squared wells, Site II Structures 21 and 29b, are the only known wells at Kingany (Figure 3.20). Both were constructed of coral rag and limestone and were approximately two metres deep. Neither had any evidence of plaster.

A lone pillar tomb at Kingany is located south of Morafeno village in a heavily vegetated and undeveloped area (Figures 3.18 and 3.23). The tomb had a partially collapsed, low-rising, *qibla*-oriented, rectangular enclosure decorated with a series of rectangular inset panels set into the wall exteriors. A squared plinth on the eastern wall gave way to an octagonal pillar greater than two metres in height. The pinnacle of the pillar was degraded at the time of visit, but it is possible that an imported bowl was once inset at its apex, as seen at contemporary coastal sites (Baumanova 2018). The pillar was constructed of planar coralline limestone blocks, while the enclosure was built of unshaped limestone and coral rag. Trace amounts of lime plaster visible across the tomb might indicate that it was once completely coated. The architectural characteristics of the tomb are remarkably similar to those observed on the East African mainland between the 13th-16th centuries (Baumanova 2018: 393; Vérin 1986: 167). The village elders informed the team that this grave belonged to the founding father of Kingany, possibly Kambamba or Manafy, and was home to powerful *jinn*. Paper Malagasy Ariary, the present-day currency of Madagascar, was left on the plinth at the base of the pillar, perhaps to venerate the foundational figure buried there or to appease the *jinn*.

Figure 3.23: Pillar tomb, Kingany Site III Tomb 3.

Hundreds of metres of partially collapsed wall were encountered by the author east of Site III, which were absent from Vérin's plan (Figure 3.18). Constructed of uncut coral and coralline limestone, with no evidence of plaster coating, this span ran roughly east to west with an average height of 10-15 cm with the tallest standing portions reaching 1.5 m. The width of the wall varied, due to degradation, but the average was approximately 50 cm thick. A separate span of wall to the west of Site III ran roughly east-west for more than 50 m. This stretch was of similar construction to the other walls at the site, reaching roughly 50 cm in height and approximately 50-60 cm in width. It appears that these walls were built to separate the settlement from the southern peninsula. It is unclear whether this was done to prevent people or wild animals from entering or livestock from leaving.

3.C.*I*.c. Mahilaka

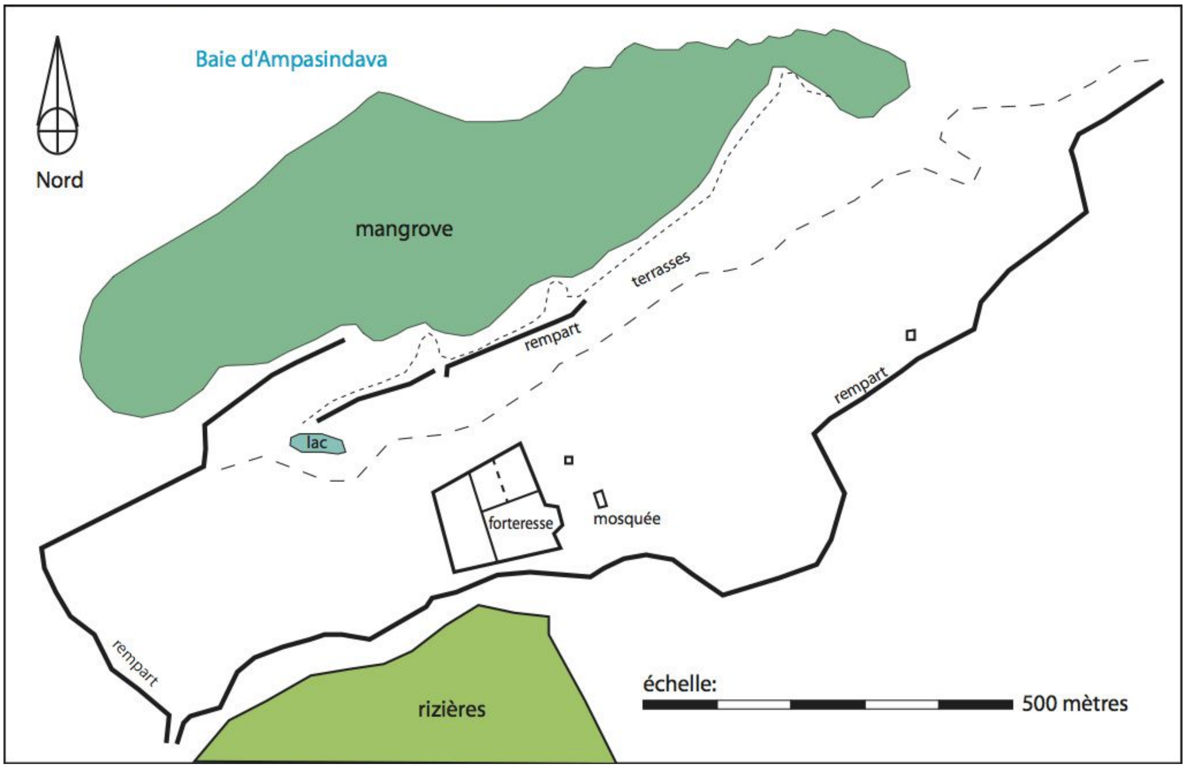


Figure 3.24: Site map of Mahilaka, Pauly 2012, based on Radimilahy 1998: 74.

The site of Mahilaka, located less than 20 km southwest of Ambanja in Ampasindava Bay, was recognised as possessing important cultural heritage as early as 1902 by M. Millot, who had agricultural rights to land in the vicinity of the site (Section 2.E.*III*.a) (Radimilahy 2017: 286). Chantal Radimilahy, an archaeologist who has spent three decades researching the site, guided the team during the 2018 archaeological visit. Today, the site is partially covered by a cashew, coconut, coffee, jackfruit, pepper, and ylang-ylang plantation. A stone mosque, the fort, the northern sea wall, and the modern mosque used by plantation workers were visited by the author (Figure 3.24).

The archaeological sequence of the site, produced by Radimilahy, recommends a 9th-15th century chronology (Beaujard 2019b: 139). The remains of a mosque at Mahilaka, a roughly rectangular series of low-rising vegetated mounds, mark the location of the oldest known structure of its kind in Madagascar (Radimilahy 2017: 287). However, the structural remains visible were those of Charles Poirier's 1940s concrete rebuild and not the 12th century building (Chantal Radimilahy *pers. comm.* 10 September 2018). Cobble-dense concrete and potential coral rag was visible in isolated outcrops. The *miḥrāb* was almost completely missing, but its rough orientation and width was inferable from the *qibla* wall remains. According to Dewar and Wright, the *miḥrāb* was "deep[ly] rounded" in a manner reminiscent of 14th century Comorian mosques (1993: 433).

The fort, an approximately two-hectare enclosure, was located in the centre of Mahilaka (Dewar and Wright 1993: 433). The thick walls of the fort were built of large, irregular-to-planar, limestone and coral cobbles bonded with minimal amounts of lime mortar. This construction technique, known as "*riba*" or "*manda*", has been compared by Radimilahy to the famous sea wall of the Swahili site of Manda in the Lamu Archipelago, from which the term might be derived (1998: 37; 2017: 287). Surviving portions of the northern, southern, and western walls were greater than two metres tall, but a majority of the fort was just under one metre in height. The stone enclosure was likely built *circa* the 12th century, replacing a previous wooden palisade, and was internally divided into workspaces and residences for skilled artisans, including jewellers and ironworkers (Radimilahy 1998: 127-130). No evidence for these internal divisions is visible at ground level.

Local ceramics dominated the surface assemblage, though few artefacts were encountered. However, a single blue, wound glass bead and multiple pieces of worked chlorite schist were found in recently disturbed soil. A local "inverted rounded" ceramic rim, and an incised body sherd, both likely from Mahilaka Occupation Unit *IIb*, 14th-15th centuries, were observed in the western half of the site (Figure 3.25) (Chantal Radimilahy *pers. comm.* 10 September 2018). Following the field visit, the team was permitted by Radimilahy to examine five fragments of worked chlorite schist collected from the surface that summer (Figures 3.26 and 3.27). These pieces, which included two drilled pieces, a ground-disk counter, and two sizeable vessel fragments were similar to those pieces recovered from excavations at Kingany the following year (Sections 4.C.*II*.b.*iv*, 4.C.*II*.c.iv, and 4.C.*II*.d.iv).

Figures 3.25, 3.26, and 3.27: Left: Decorated sherd**; Centre:** Chlorite schist fragments**; Right:** Chlorite schist fragments.

The present-day Mahilaka village mosque was a simple, rectangular structure constructed of vertically arranged wooden poles, possibly mangrove, topped with a corrugated metal roof. Outside the mosque entrance, located on its southern wall, was a small concrete patio. A simple square *miḥrāb*, approximately a metre wide by a half-metre deep, was set slightly diagonal to the rest of the *qibla* wall. To the right of, and connected to, the *miḥrāb* was an inset room or *minbar* niche, similar to those of 19th century Zanzibari style mosques (Pradines 2003: 366). The Imam of Mahilaka claimed that Malagasy Islam is “Anjuju”, or of the Anjouani. He said that local Islam is “*Bunian*”, Malagasy for elf, potentially a reference to the *Orang bunian*, sprite-like beings of light not dissimilar to *jinn*, of Bruneian, Indonesian, and Malaysian folklore, and more relaxed than the core Islamic world, even permitting the consumption of alcohol (Hadler 2008: 106). The Imam believed that the Islam practised in Mahilaka today is a continuation of what had been observed at the archaeological site.

3.C.*II*. Excavation:

The following details the excavation conducted by the author at Kingany Site II in spring 2019.

Subsurface data collection was primarily achieved using 50-cm^2 sondages, 21 of which were placed in linear transects (Figure 3.28). This alignment was enacted to expedite field mapping, provide a degree of control, and better understand exposed stratigraphy. Two test excavation units (Test Unit 1: 1 m by 2 m and Test Unit 2: 2 m^2) were completed (Figure 3.28). Test Unit 1 (TU1) was excavated within the *muṣallā* of the southern mosque, and Test Unit 2 (TU2) was situated just south of TU1 adjacent to a well (Structure 29b). Test units were excavated in 10-20 cm arbitrary levels until contextual evidence prompted a shift in methodology, i.e. visible fill compositional changes. Once a stratigraphic boundary was encountered, attempts were made to ensure that the stratum was removed in its entirety as a unique context. Soil composition and colour, defined by the Munsell Color System, was logged throughout. All excavated soil was sieved. Wet sieving and flotation of soil samples was completed to retrieve archaeobotanical remains. Soil flotation occurred on-site using a series of buckets and graded sieves to filter and float samples. All excavated pits were backfilled following artefact/soil sample collection and profile recordation.

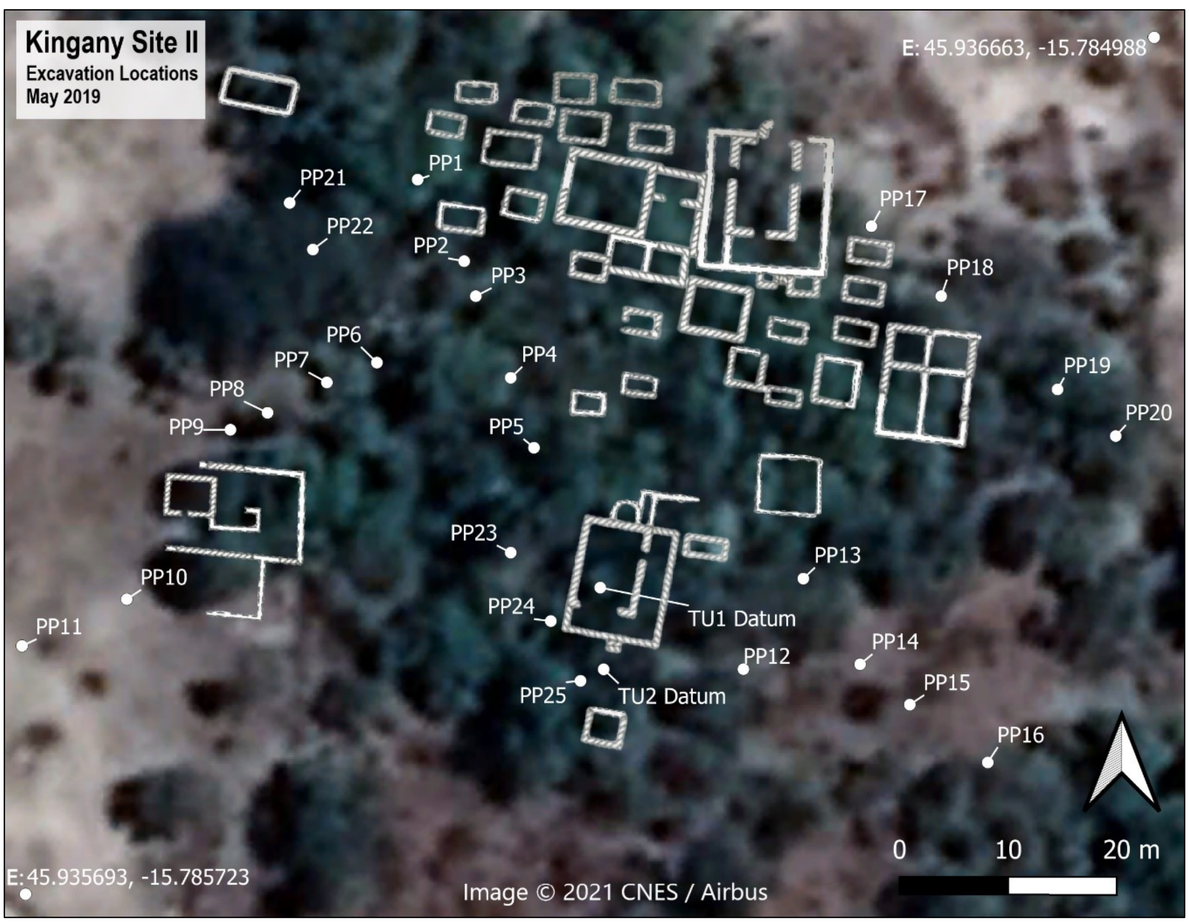


Figure 3.28: Locations of excavations at Kingany Site II in May 2019.

Measurements, GPS coordinates, and construction techniques of all structures at Kingany were recorded to allow for the production of georeferenced maps and to facilitate the comparison of architecture with that of the Mozambique Channel and coastal East Africa.

3.C.*II*.a. Probing Pits (PP1 – PP25)

Unit	PP1		PP2		PP3		PP4		PP5		PP6		PP7	
Surface	4m	elv	4m	elv	4m	elv	4m	elv	5m	elv	5m	elv	5m	elv
10 cm	Top Soil		Top Soil		Top Soil		Top Soil		Top Soil		Top Soil		Top Soil	
20 cm	10YR 6/2	Fine						Fine		Fine		Fine		Fine
30 cm		Sand	10YR 5/2	Sand			10YR 3/2	Sand	10YR 3/1	to	10YR 4/1	Sand		Sand
40 cm		Very				Very				Medium			10YR 4/2	with
50 cm	10 YR 3/2	Fine		Compact	10YR 4/2	Fine		Compact		Sand		Coarse		Quartz
60 cm		Sand	10YR 3/2	Fine		Sand	10YR 2/2	Fine		Fine	10YR 5/2	Sand		Pebbles
70 cm	10YR 4/2	Charcoal		Sand				Sand	10YR 3/2	Sand		and Daub	10YR 3/2	Coarse
80 cm	10YR 3/2	Fine						Mixed				Coarse		Sand
90 cm		Sand			10YR 4/3	Sterile		Silt	10YR 6/3	Fine	10YR 4/3	Sand	10YR 6/2	Coarse
100 cm	88 cm					Sand	10 YR 6/2	and		Sand				Sand
110 cm			101 cm		95 cm			Fine	105 cm		102 cm		10YR 5/2	Sterile
120 cm								Sand					106 cm	
							118 cm							

Figure 3.29: Stratigraphic breakdown of Probing Pits 1-7.

Twenty-five 50 cm^2 probing pits, all of which produced some amount of artefacts (Section 4.C.*II*.b), were excavated at Site II. Probing Pits 1-5 (PP1-PP5) ran linearly, north-northwest to south-southeast, through an open area west of the northern tomb cluster (structures 1-27). These units, along with the linearly arranged PP6-PP9 and PP21-PP22, were positioned to investigate the Central Open Area (COA), the largest architecture-free space of Site II (Figure 3.28). Terminal depths for these sondages ranged between 88-121 cm (Figures 3.29, 3.30, and 3.33), with artefacts persisting in the bottommost fill of every unit except for PP3 and PP7 which encountered non-archaeological soils at 80 and 101 cm, respectively. The soil composition of the COA was fairly homogenous throughout with primarily darker soils above lighter, compacted sands (Figure 3.29). Small, coarse quartz pebbles were ubiquitous throughout Site II subsurface strata. Only two sondages in the COA contained strata with substantial charcoal elements, PP1 and PP25 (Figures 3.29 and 3.33).

Two probing pits, PP10 and PP11, were excavated southeast of Building 32 in the Western Open Area (WOA) (Figures 3.28 and 3.30). These units were positioned in what appeared to be outside the core of the past settlement in order to test for site boundaries, but proved to be the second-most productive area of the entire campaign (Section 4.C.*II*.b.*i*.*3*). Both sondages were excavated to a depth of approximately one metre and were still producing archaeological remains at their termination. The stratigraphy of the WOA was primarily composed of coarse sands, but PP11 also contained an approximately 30 cm thick lens of dark (10YR 2/1), degraded coral/lime-filled soil (Figure 3.30). Given the lack of standing architecture in the vicinity of PP11, and the characteristics of the soil, it is probable that this lens might evidence a localised lime production area.

Unit	PP8		PP9		PP10		PP11		PP12		PP13		PP14	
Surface	5m	elv	5m	elv	5m	elv	5m	elv	5m	elv	5m	elv	5m	elv
10 cm	Top Soil		Top Soil		Top Soil		Top Soil		Top Soil		Top Soil		Top Soil	
20 cm	10YR 3/2	Silty sand		Silt						Compact		Fine		Medium
30 cm		Fine	10YR 3/1	to		Mixed		Compact	10YR 3/2	Very	10YR 3/1	to	10YR 4/2	Sand
40 cm		to		Fine	10YR 3/1	Very	10YR 3/2	Coarse		Fine		Medium		
50 cm	10YR 4/2	Coarse		Sand		Coarse		Sand		Sand		Sand		Coarse
60 cm		Sand	10YR 4/3	Fine		Sand		Coral-rich		Very		Medium	10YR 5/2	Sand
70 cm				Sand		Compact	10YR 2/1	Sand		Fine	10YR 4/2	Sand		
80 cm		Coarse		Compact	10Yr 4/2	Fine			10YR 4/3	to				Compact
90 cm	10YR 6/2	Sand	10YR 6/4	Fine		Sand	10YR 5/2	Coarse		Coarse	10YR 5/3	Medium	10YR 6/3	Coarse
100 cm				Sand				Sand		Sand		Sand		Sand
110 cm	99 cm				99 cm		100 cm		105 cm		99 cm		101 cm	
120 cm			114 cm											

Figure 3.30: Stratigraphic breakdown of Probing Pits 8-14.

Five probing pits, PP12-PP16, were excavated in two perpendicularly arranged lines east of the southern mosque (Figures 3.30 and 3.31). These sondages were positioned to test spatial utilisation of the Eastern Open Area (EOA), or the forested space between the southern mosque and Site II *bis*. The EOA was actively being clear-cut by Morafeno residents for future development during the excavation. This process was directly impacting the archaeological site as falling trees tore up fragile building foundations and walls.

Unit	PP15		PP16		PP17		PP18		PP19		PP20	
Surface	5m	elv	5m	elv	5m	elv	5m	elv	5m	elv	5m	elv
10 cm	Top Soil		Top Soil		Top Soil		Top Soil		Top Soil		Top Soil	
20 cm		Compact		Lime-rich				Very	10YR 4/2	Fine		Very
30 cm	10YR 4/2	Fine	10YR 2/1	Silty		Medium	10YR 5/2	Fine		Sand		Fine
40 cm		Sand		Sand	10YR 4/2	Sand		Sand		Compact	10YR 5/3	to
50 cm			36 cm						10YR 5/3	Coarse		Fine
60 cm	10YR 3/4	Sand				Fine		Coarse		Sand		Sand
70 cm		Medium			10YR 3/3	to	10YR 4/3	Sand				
80 cm	10YR 6/4	to				Medium			10YR 3/2	Sterile		
90 cm		Coarse				Sand	10YR 6/2	Sterile		Sand	10YR 3/1	Charcoal
100 cm		Sand						Sand	88 cm		10YR 5/3	Coarse
110 cm	98 cm				98 cm		95 cm					Sand
120 cm											105 cm	

Figure 3.31: Stratigraphic breakdown of Probing Pits 15-20.

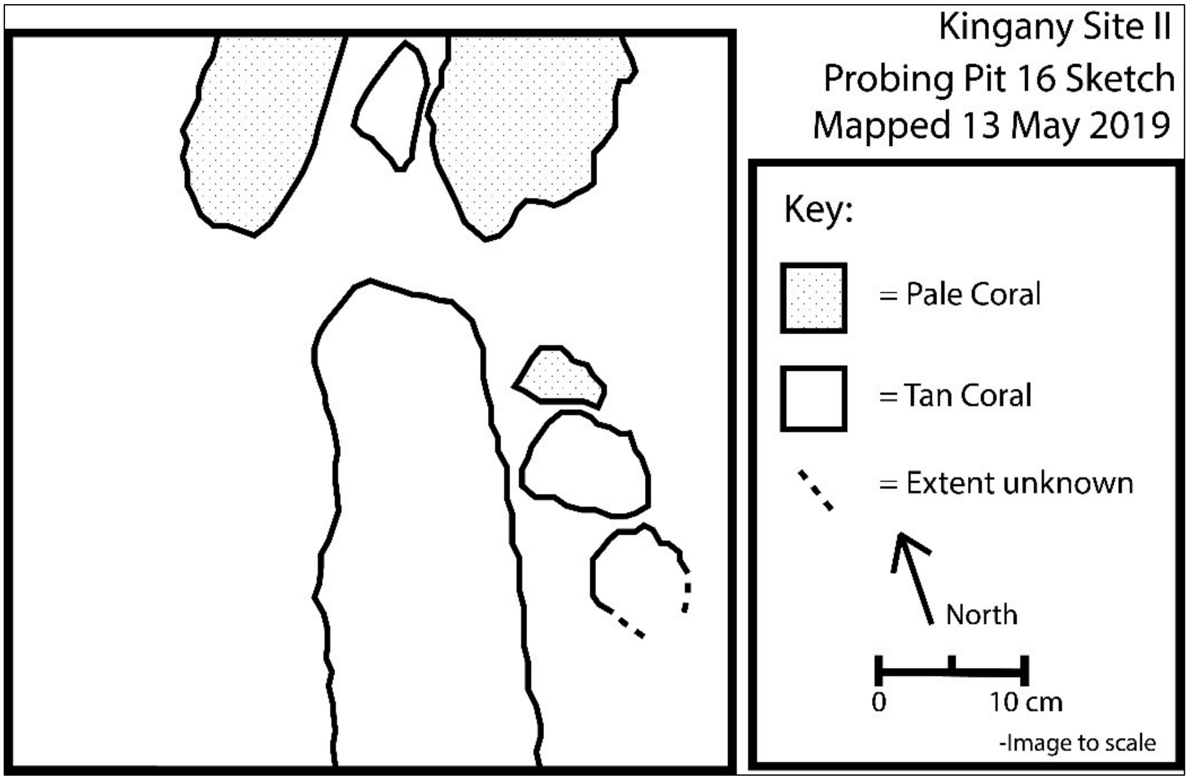


Figure 3.32: Sketch map of wall encountered in Probing Pit 16, Kingany Site II.

Four of the five probing pits, PP12-PP15, were excavated to approximately one metre depth and were in archaeological fill at their closing (Figures 3.30 and 3.31). EOA soil compositions were similar to those encountered in the COA. PP16 terminated at approximately 36 cm after a portion of an intact wall was encountered (Figure 3.32). The exposed architecture was composed of coral-and-lime, about 30 cm thick, and ran roughly north-south across the length of the unit. No architecture corresponding to the wall was visible above ground, though Building 35, of Site II *bis,* was located less than five metres to the southeast of PP16. Building 35, a residential structure excavated by Vérin (Section 3.C.*I*.b), is significantly recessed in a small hill, with approximately 60 cm of the structure being below the ambient surface level. The wall within PP16 possibly marks the location of an outbuilding to Building 35.

Probing Pits 17-20 were positioned on the edge of the northern slope of the dune on which Site II sits, in the Northern Open Area (NOA), to investigate the northeastern settlement boundary (Figure 3.31). Terminal depths for these sondages varied between 88-105 cm, with non-archaeological strata reached in PP18 and

PP19 at 79 and 69 cm, respectively. All NOA units contained bands of darker soil, and charcoal in the case of PP20, positioned beneath lighter soils, the inverse of trends observed throughout the rest of the site. The non-archaeological layer encountered in PP19 was the only instance of dark sterile soil encountered during the entire expedition.

Unit	PP21		PP22		PP23		PP24		PP25	
Surface	5m	elv	6m	elv	5m	elv	5m	elv	5m	elv
10 cm	Top Soil		Top Soil		Top Soil		Top Soil		Top Soil	
20 cm				Fine		Silty				Very
30 cm		Compact	10YR 5/2	to	10YR 3/2	to		Very	10YR 3/2	Fine
40 cm	10YR 5/3	Fine		Medium		Medium	10YR 3/2	Fine		Sand
50 cm		Sand		Sand		Sand		Sand	10YR 4/2	Fine Sand
60 cm		Very				Very		Fine		Charcoal
70 cm	10YR 5/2	Fine		Silty		Fine		to		Compact
80 cm		Sand	10YR 3/2	Sand	10YR 6/2	to	10YR 6/3	Coarse	10YR 6/3	Fine
90 cm				with		Coarse		Sand		to
100 cm		Fine		Charcoal		Sand				Medium
110 cm	10YR 3/2	Sand	10YR 6/2	Fine Sand						Sand
120 cm			109 cm		108 cm		105 cm		112 cm	
	121 cm									

Figure 3.33: Stratigraphic breakdown of Probing Pits 21-25.

Three probing pits, PP23-PP25, were excavated to the west and south of the southern mosque to examine the open areas around the building (Figure 3.28). PP25 was positioned between the southern mosque entrance and a well, Structure 29b, to test whether or not the latter was utilised for ablution purposes, predicated on the apparent absence of a dedicated basin at the nearby mosque (Figure 3.28). TU2, positioned less than three metres east of PP25, examined this space in greater detail (Section 3.C.*II*.c). PP23-PP25 were excavated to between 105-112 cm depth, with archaeological fill present throughout the entirety of the units (Figure 3.33). The stratigraphy of these three units were uniform, with a transition from dark soil to lighter fill occurring at *circa* 60 cm, with the exception of a roughly 20 cm thick charcoal-rich lens marking this boundary in PP25.

3.C.*II*.b. Test Unit 1 (TU1)

This 1 m (east/east) by 2 m (north/south) unit was located within the *muṣallā* of the southern mosque (Figures 3.28 and 3.34). Bevoa trees growing in the *muṣallā* and

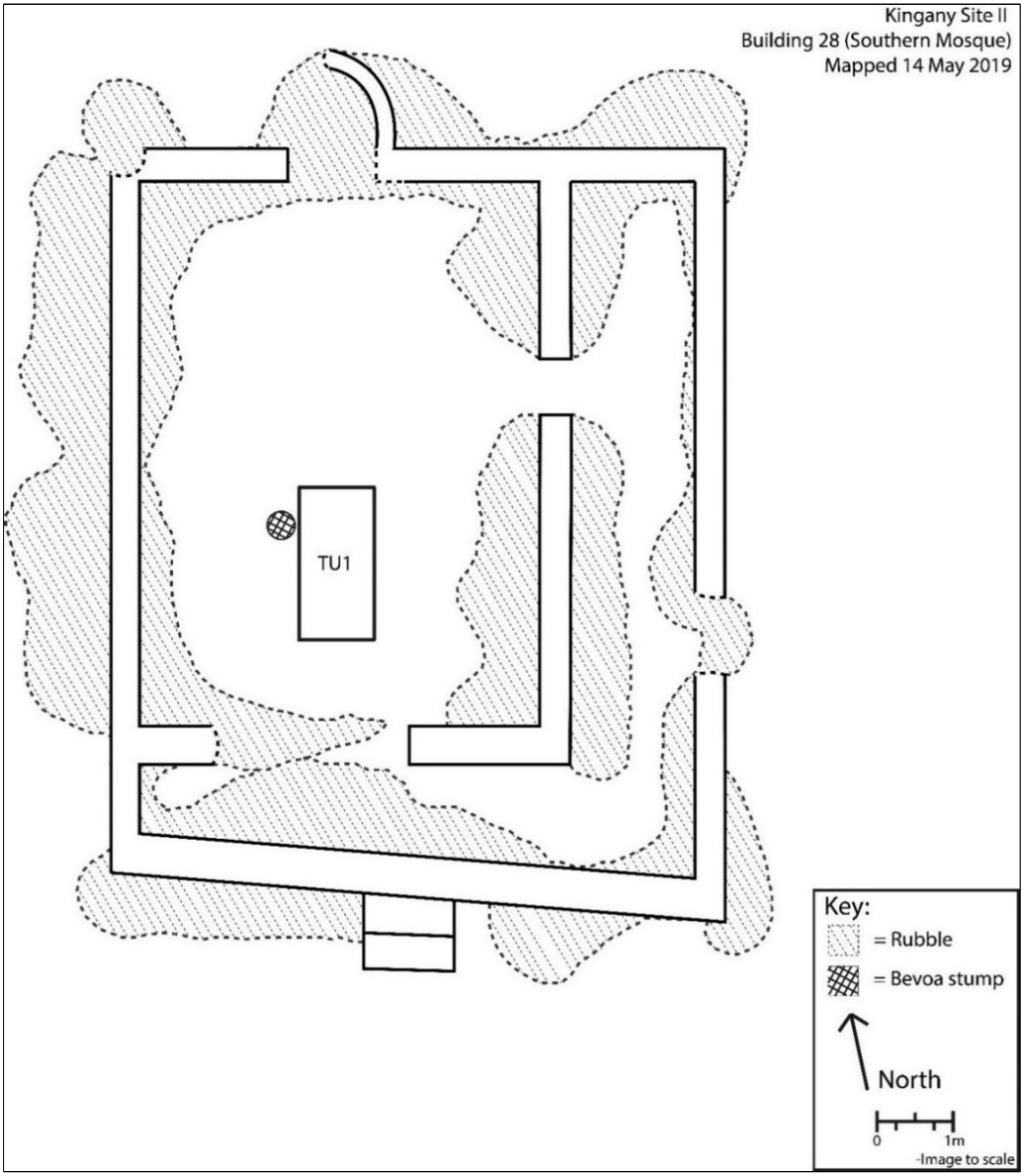
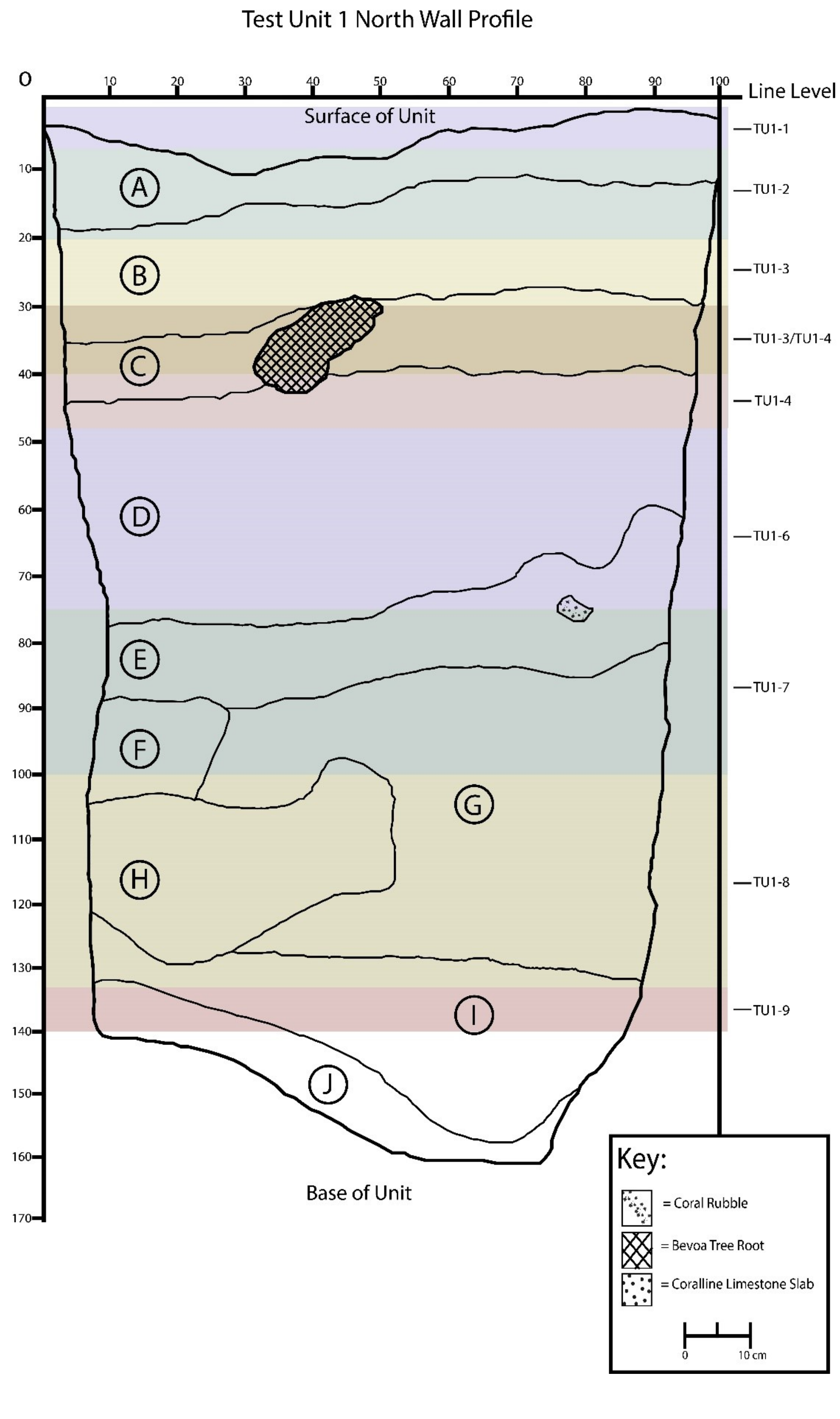


Figure 3.34: Sketch map of the Kingany Site II southern mosque.

a depression marking a sondage excavated by Vérin restricted the viable space for inspection, leaving only a narrow zone near the southern entrance. Ground level within Building 28 was noticeably higher along the walls and sank towards the interior, certainly as a result of wall fall. The highest point of TU1, the northwestern corner, was six metres above sea level. Using a line level, the lowest point of TU1's surface was compared to that of TU2, finding the latter to be 32 cm lower than the



Stratigraphy Index:
A: Dense foliage atop mixed, dark biological soils with mixed coral rubble and many small roots.
B: 10YR 4/2 fine to medium, silty sand with many small quartz pebbles and roots.
C: 10YR 5/2 fine to medium sand with many small cobble-sized chunks of disassociated coral and lime inclusions. Numerous *mahôgon dambo* tubers.
D: 10YR 6/3 fine, homogenous sand with mixed small marine shell and few small roots.
E: 10YR 5/3 fine to coarse sand with few cobble-sized chunks of disassociated coral and lime inclusions with many small quartz and gypsum pebbles. Some marine shell.
F: 10YR 2/1 fine to medium sand with occasional medium sized charcoal flecks.
G: 10YR 4/3 fine to medium sand with few small charcoal flecks and quartz pebbles.
H: 10YR 3/2 fine to medium sand with frequent dark sandy inclusions and medium charcoal flecks.
I: 10YR 5/4 fine to coarse sand with some small roots.
J: 10YR 7/2 medium, homogenous sand. Moist and loosely compacted.

Figure 3.35: Test Unit 1 northern wall profile.

former. Given this, and trends observed at contemporary East African coastal settlements, it is probable that Building 28 was built upon either a natural rise on the dune or upon a man-made foundation (Horton, Fleisher, and Wynne-Jones 2017: 170).

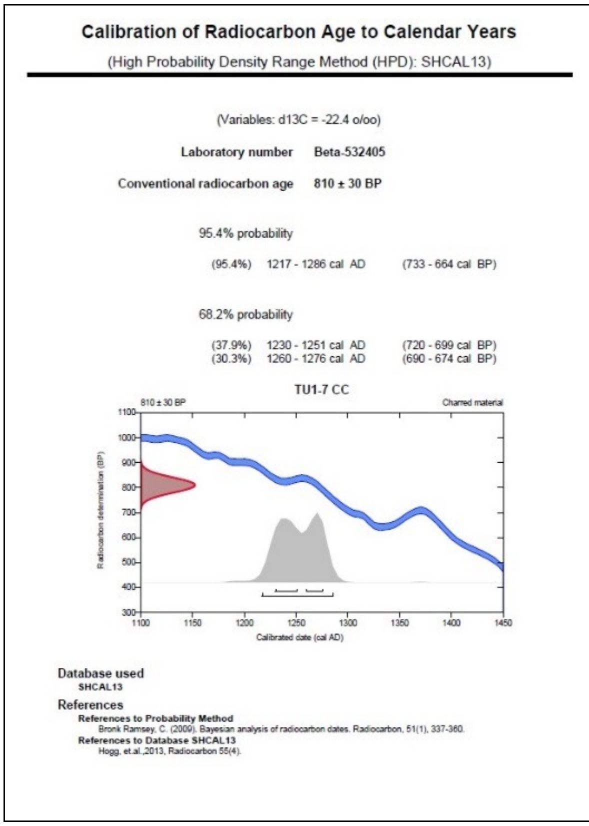
Figure 3.36: TU1-2 root mat.

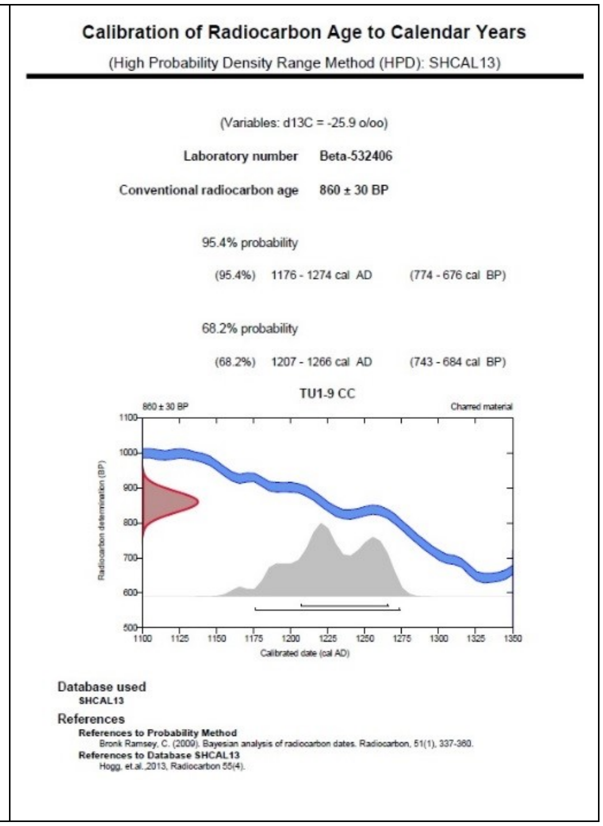
Archaeological contexts were encountered following the removal of the topsoil, TU1-1, at seven centimetres below surface level. TU1-2, the initial occupational stratum of the unit which roughly corresponded with Stratum A (Figure 3.35), was composed of 10YR 5/2 very fine to coarse mixed sand, with dense root inclusions. At about 20 cm depth, large roots from adjacent bevoa trees formed a thick mat across most of the unit. This mat was removed with the use of machetes. An arbitrary context change was enacted following the root mat removal, at approximately 20 cm depth (Figure 3.36). TU1-3 contained fill similar to that of TU1-2, but with larger pieces of disassociated coral rubble and concentrations of lime near the base of the level. Strata B and C contained dozens of large cobble-sized *mahôgon dambo* tubers, an edible, but bitter tasting, manioc subspecies. Bioturbation in the southern third of the unit disguised the Stratum B to C boundary resulting in fill being removed as TU1-3 in this zone, instead of as a new context. The northern two-thirds of the unit were excavated as TU1-4, beginning at approximately 31 cm depth, prompted by a drastic increase in coral rubble and lime in the soil.

The base of TU1-3/start of TU1-4, roughly corresponding with Stratum C, possibly contained the degraded remains of the mosque's collapsed ceiling or upper wall fall. However, the density of coral was significantly less than what would be expected for a stone ceiling, potentially indicating that the mosque had a vegetal roof or that building stone was reused for later structures. At approximately 38 cm depth, a lens of darkened soil, 10YR 2/1, anchored by vertically protruding roots was encountered in the northeastern quadrant. This roughly oval, 30 cm (north/south) by 25 cm (east/west), patch of fill was designated TU1-5. A soil sample for flotation was taken from TU1-5, nearly removing the context in its entirety. TU1-5 was no longer visible at approximately 48 cm depth and was determined to be a lens of bioturbation following its excavation. Therefore, artefacts from this context had likely been shifted from their primary depositional contexts by natural processes.

Light homogenous sand, appearing first in the centre of the unit at 48 cm depth, marked the context change to TU1-6. As Stratum C likely represented the remains of Building 28's ceiling, it is probable that TU1-6, roughly corresponding to Stratum D, would have been foundation or floor fill (Figure 3.35). The composition of Stratum D, a sandy layer rich in small marine shell, bespoke the use of beach sand as foundational fill, similar to techniques employed in the Kilwa Archipelago (Wynne-Jones and Fleisher 2016: 125). A sandstone slab (Figure 4.63), which protruded from the central-western wall at 69 cm depth, near the base of Stratum D, appeared to be an intentionally shaped flagstone or potentially a portion of a foundation for a wooden pillar, similar to those found in the sub-floor strata of the Songo Mnara central mosque (Horton, Fleisher, and Wynne-Jones 2017: 173). The flagstone was preserved *in situ on* a pedestal and was removed following the partial collapse of the TU1's walls.

The upper portion of TU1-7, beginning at 78 cm depth and corresponding with Stratum E, contained cobble-sized chunks of disassociated coral rubble and lime inclusions, possibly indicating that the mosque wall footing was initially backfill or rubble, subsequently topped with beach sand. The soil of Stratum E was mottled darker soil with numerous oxidised ceramic sherds. Thousands of burnt and degraded fishbones came from this fill, with concentrations in the southwestern quadrant below 80 cm depth, located within the charcoal-rich soil of Stratum F (Section 4.C.*II*.c.*ii*). Only faunal fragments resilient enough to be transported were collected. A soil sample for flotation was collected from the northern half of the unit at 78 cm depth.





Figures 3.37 and 3.38: Left: TU1-7CC C[14] AMS results**; Right:** TU1-9CC C[14] AMS results.

A charcoal sample for carbon[14] (C[14]) accelerator mass spectrometry (AMS) dating was collected from a dark concentration in Stratum F/TU1-7's southwestern quadrant at 98 cm depth. This sample dated to 1217-1286 (733-664 cal BP), isotope ratio mass spectrometer (IRMS) δ13C: -22.4 o/oo, with a 95.4% certainty (Figure 3.37). A charcoal specimen collected from a residential structure (Building 35) by Vérin dated to 1015 (calibrated age), "with a 95% probability that the true date [fell] between AD 880 and 1210" would appear to corroborate these findings (Section 3.C.*I*.b) (Wright, *et al.* 1996: 47). Together, these data indicate multiple centuries of habitation at Kingany prior to the construction of the southern mosque.

An arbitrary context change to TU1-8 was made at one metre depth, though the soil remained consistent with that of the previous 10 cm. TU1-8 corresponded with Strata G and H, compositionally similar stratigraphy, except for dark sandy inclusions in the latter (Figure 3.35).

Figure 3.39: Test Unit 1 end of excavation photo.

Sterile soil, Stratum J, was encountered in the western half of the unit at 133 cm depth (Figure 3.35). Approximately 30 cm of Stratum J was excavated to ensure that it was non-archaeological. Archaeological fill persisted in the eastern half of the unit, Stratum I, until 156 cm depth (Figure 3.35). TU1-9 was created to investigate this fill. The southern portion of Stratum I contained noticeably more mottled soil, with charcoal flecks and bone, than the lighter northern half. A charcoal sample for C^{14} AMS dating was collected in the southeastern quadrant of TU1-9 at 133 cm depth. This sample was dated to 1176-1274 (774-676 cal BP), IRMS δ13C: -25.9 o/oo, with a 95.4% certainty (Figure 3.38). Unfortunately, the eastern and western walls of the unit collapsed preventing further investigation. The team observed artefacts, ceramic and faunal, within TU1-9 fill prior to the cave-in. Based on the observed presence of charcoal, large bones, and the intrusive nature of TU1-9, it is probable that the context is that of a shallow midden or hearth dug into the virginal dune by early inhabitants of Kingany.

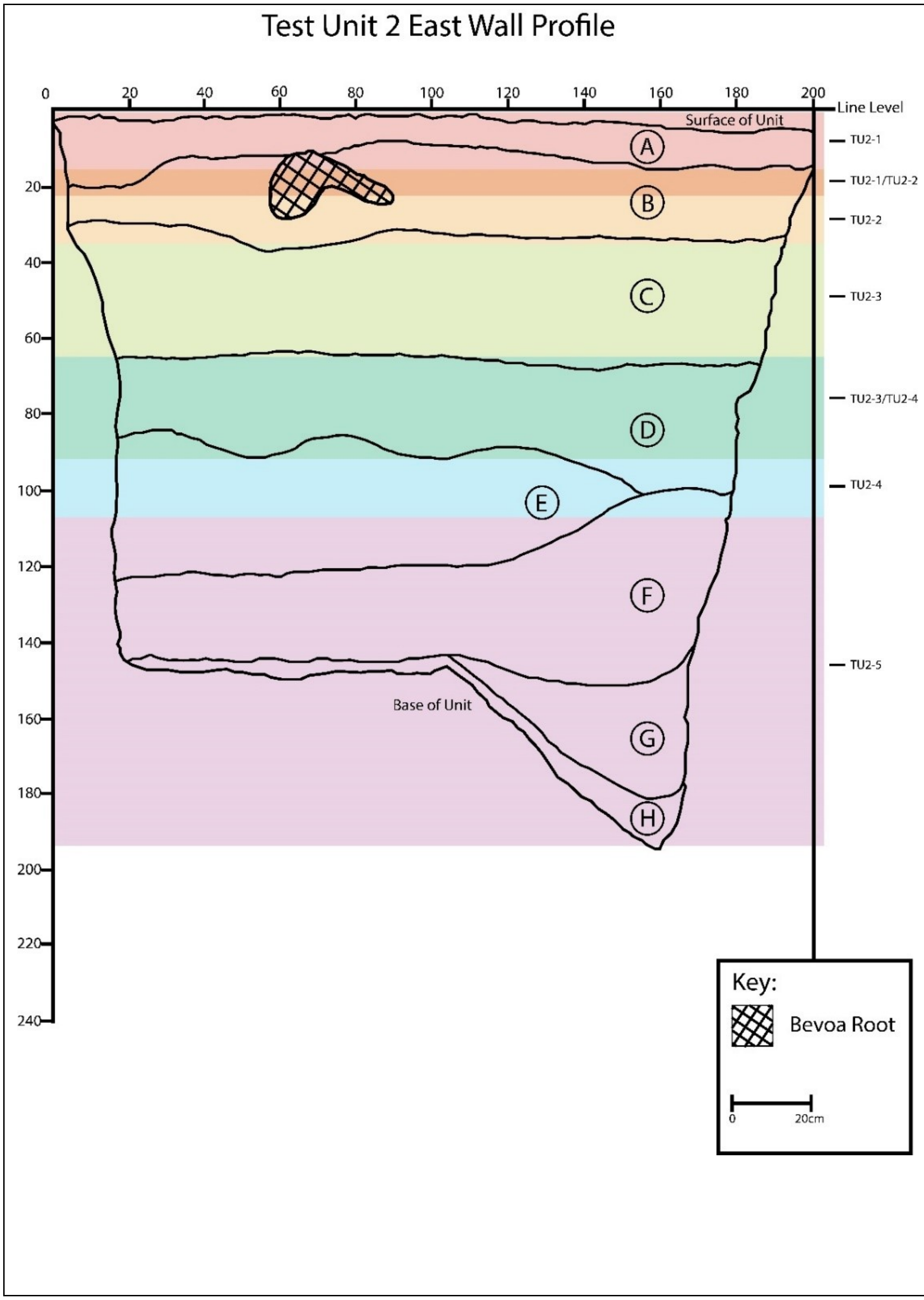
Once non-archaeological fill had been exposed across the entirety of the northern half of the unit, the northern profile wall was mapped, and the unit was backfilled (Figure 3.39).

3.C.*II*.c. Test Unit 2 (TU2)

This two-square-metre unit was excavated south of the southern mosque and north of a well (Structure 29b) in what was demonstrated to be a high-traffic zone by PP25 (Sections 3.C.*II*.a and 4.C.*II*.b.*i.5*) (Figure 3.28). Structure 29b potentially served ablution functions for the nearby mosque, evidenced in part by a set of steps leading from the well to the southern entrance of the *muṣallā* (Figure 3.34). The lack of a portal into the outer hallway, or *ziyada*, on the eastern side of the building supports the southern doorway as the principal entrance to the mosque.

The surface of the unit was approximately 5 m above sea level and was covered in dense foliage. Artefacts were encountered from the topsoil layer, TU2-1 or Stratum A, at 5 cm depth. Nearly a kilogramme (kg) of archaeological material was recovered from the initial 15 cm of archaeological fill, including a late Song, Longquan celadon sherd found near the centre of TU2-1 at 21 cm depth (Section 4.C.*II*.d.*i*) (Hannah Parsons-Morgan *pers. comm.* 26 June 2019). However, as TU2-

1 was composed of bioturbated soil loosely bound by a ubiquitous root mat, these objects were almost certainly not within their primary depositional contexts. No shells were collected from TU2-1 as they were likely non-archaeological contaminating material.



Stratigraphy:
A: Dense foliage atop dark, mixed biological soils with many small to medium roots.
B: 10YR 4/1 very fine to medium sand with few small marine shells and many small to large roots.
C: 10YR 4/2 fine to coarse sand with frequent small quartz pebbles, marine shells, and roots.
D: 10YR 5/2 fine to medium sand with some small charcoal flecks and small roots.
E: 10YR 5/3 fine sand with few small charcoal flecks and small marine shells.
F: 10YR 5/4 fine sand with few small cobble-sized pieces of coral, medium charcoal flecks, daub inclusions, and some marine shell.
G: 10YR 6/2 fine to medium sand with minor mottling dark soil with small charcoal flecks.
H: 10YR 8/3 medium, homogenous sand.

Figure 3.40: Test Unit 2 eastern wall profile.

An arbitrary context change to TU2-2, corresponding to Strata B and C, was made following the removal of the root mat at approximately 15 cm depth, though the centre of the unit dipped to 21 cm (Figure 3.40). A lighter grey, compacted sand, was encountered in the bottom 10 cm of TU2-2.

Brown, charcoal flecked soil appeared at *circa* 35 cm depth, prompting the designation of a new context (Figure 3.40). TU2-3, corresponding with Strata C and D, was excavated over two days and proved to be the most productive archaeological layer of the entire 2019 Kingany expedition, containing over a third of all artefacts collected site-wide, as well as the largest with an approximate volume of 2.28 m^3 (Section 4.C.*II*.d.*i*). The horizontal positioning and artefact assemblage of TU2-3 recommends that its stratigraphy is contemporary to the construction of the southern mosque, or TU1-6 and TU1-7 (3.C.*II*.b).

A context change, first visible in the eastern portion of the unit at approximately 65 cm depth, aligned with a cluster of coral rubble visible in the northern wall. An attempt was made to find more of this context, TU2-4, fill by excavating only the western half of the unit, but the mottled nature of the soil obscured composition changes until approximately 92 cm depth (Figure 3.40). Soil was removed as TU2-4 until the unit was level at approximately 1 m depth. TU2-4 contained roughly 20% of the assemblage of TU2-3, despite being nearly 70% of its size by volume (Section 4.C.*II*.d.*i*). This differential would appear to indicate more intense site utilisation in the vicinity of the southern mosque during the phases corresponding with TU2-3 strata than those depicted by TU2-4.

TU2-3-like fill persisted at one metre depth resulting in two distinct, visible contexts, TU2-5 on the eastern half, Stratum F, and TU2-6 on the western half of the unit, Stratum E (Figure 3.40). As excavation proceeded, precautions were taken to avoid wall collapse by leaving a roughly 40 cm wide pedestal against the western unit wall. This pedestal encompassed most visible TU2-6 fill. TU2-5 contained considerably less artefacts than the preceding layers, but fragments of Yuan Longquan celadon and Martaban storage vessel were recovered from the southwestern quadrant at 110 cm depth, likely from Stratum F (Section 4.C.*II*.d.*i*) (Hannah Parsons-Morgan *pers. comm.* 26 June 2019). TU2-5 was excavated to non-archaeological stratum.

A 40 cm^2 sample of the TU2-6 pedestal was excavated, beginning at 1 m and reached sterile substrate at approximately 194 cm depth. This sondage produced almost exclusively local ceramics (Section 4.C.*II*.d.*i*). A cobble-sized chunk of coral, exposed portion measuring 17 cm long by 13 cm wide, jutted from the northern boundary wall in the western quadrant (Figure 3.40). The composition of this coral was consistent with that of those utilised as building stone throughout Kingany.

Figure 3.41: Test Unit 2 end of excavation photo.

Non-archaeological soil, Stratum H, was encountered at 140 cm depth in the northeastern section of TU2 (Figure 3.40). Archaeological fill sloped considerably to the south, beginning at 79 cm south of the northern wall and continuing into the southern unit boundary. As a result, sterile soil was not encountered in the southern half until a depth of 191 cm (Figure 3.40). This horizontal discrepancy between sterile soil in the northern and southern halves was potentially caused by the construction of the adjacent well. The eastern wall profile was mapped then TU2 was backfilled (Figure 3.41).

3.D. Conclusion

Locales examined for this study, many containing rich concentrations of artefactual remains, demonstrate that the littoral zone of the Mozambique Channel was home to a multitude of communities, some of which were at least partially Islamic, who appear to have been significantly interconnected with western Indian Ocean mercantile spheres. Having detailed the methodology of the pedestrian surveys and excavation, surface level conditions of visited sites, and stratigraphic sequences of units within Kingany Site II, it is prudent that the analysis of artefacts from the aforementioned expeditions be discussed.

Chapter 4 evaluates the archaeological assemblages encountered during this study, seeking to reconstruct the chronological sequence of the sites through the use of key typological markers and absolute dating, all data essential for the discussion within the penultimate section of this thesis.

Chapter 4. Artefact Analysis

4.A. Introduction

In this section, material from the Kingany excavation and the surveys in Mozambique and Madagascar are examined to discern lifeways associated with Islamisation while reconstructing trade relationships. Emphasis in this chapter is upon presenting the data. Wider implications of these findings in relation to the core topic of this thesis, i.e. Islamisation within the Mozambique Channel, are explored in Chapter 5.

4.B. Mozambique

As described in Chapter 3.B.*I*, the Mozambican material was recorded and collected solely during the 2018 survey completed by the author.

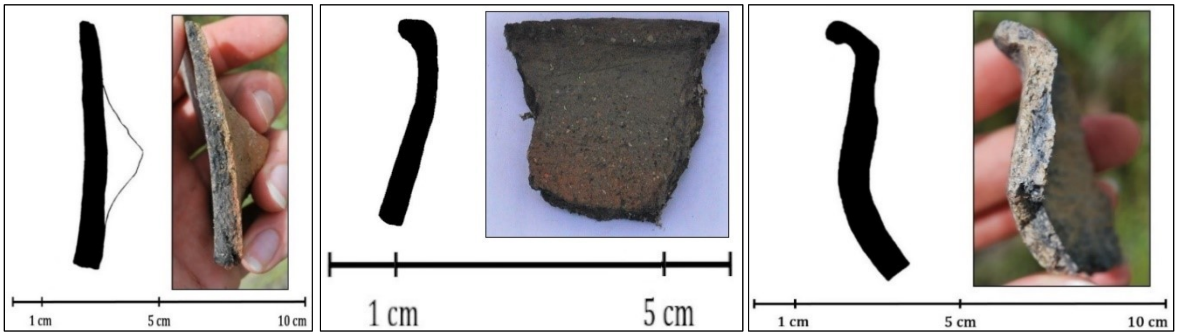
4.B.*I*. Cape Delgado Archaeological Assemblage

On Cape Delgado, 235 artefacts were documented, excluding surface level marine shell. Locally produced ceramics constitute 90% (210) of the assemblage.

4.B.*I*.a. Ceramics

Ceramics were almost universally low-fired and undecorated body sherds, light brown to dark reddish-brown in colour (Figures 4.1-4.3). Many examples possessed partially burnt or reduced matrices, possibly indicative of open firing production (Braekmans and Degryse 2017: 259). Relative chronological estimates, based on typological identification of recorded imported ceramics, dated the finds to the mid-18th to late 19th centuries.

One hundred and sixteen sherds (55%) were dining wares, i.e. bowls, cups, or plates which possessed thin walls, sometimes with red-slipped interiors, or storage vessels, all of which lacked evidence of habitual placement on cooking fires (Anderson 2019: 69; Walshaw 2010: 149). Storage vessels were generally thicker-bodied jars or concave-necked, semi-spherical pots. Four sherds were decorated, three with raked impressions beneath their rims, and a body sherd with parallel incised horizontal lines.



Figures 4.1, 4.2, and 4.3: Left: Sherd from M'Buizi 1**; Centre:** Rim from Tungi 1**; Right:** Rim from Tungi 1.

Seventy-four (35%) sherds were determined to be cooking wares based on their blackened surfaces and/or matrices, thick profiles, and substantial handles (Anderson 2019: 68). Cooking wares were divided into two sub-categories, Type 1: high-walled bowls with thickened rims/bases, and Type 2: short wide-mouthed pot-like jars. Two Type 1 bowl rim fragments were reminiscent of "Inturned rim bowls" from Shanga Phase D series 35a, 14th-17th centuries (Horton 1996: 266-269). Individual finds within the Type 2 sub-category, specifically an inverted rim sherd, were visually similar to 13th-14th century artefacts from Mahilaka Occupation unit *II*a (Radimilahy 1998: 166). These aesthetic similarities are unlikely the direct residue of regional trade as the Cape Delgado finds were almost certainly produced subsequent to the decline of Mahilaka and Shanga, but may be the result of sustained interaction between the wider Mozambique Channel and Swahili Coast (Anderson 2019: 70; Radimilahy 1998: 201; Vérin 1986: 78-79).

Imported ceramics comprised less than 10% (20) of the assemblage. European products from the 18th to mid-19th centuries, specifically British transferwares and French *Opaque de Serrigemmes*, constituted a majority of the finds (55%, 11 samples). Qinq Dynasty blue-and-white porcelains, 18th-19th centuries, were the only other trade ceramic (Adamowicz 2012: 29; Duarte 1993: 77). Shallow bowls, plates, and teacup forms were present. They were likely used as tableware, and possibly for display, but the absence of pierced or drilled sherds suggests they were not hooked onto a wall, as found in the interior of Swahili homes in Lamu, Mombasa, and Zanzibar (Meier 2009: 10). No ceramic vessels set into architecture were observed during the 2018 Cape Delgado reconnaissance.

4.B.*I*.b. Other Material

Five degraded glass fragments, shells (possibly including, but not limited to *Elisolimax flavescens*, *Gastrocopta klunzingeri*, *Kempioconcha conradti*, *Kempioconcha kirki*, *Oxymeris maculate* (marlinspike auger)*, Pteriidae* (oyster), *Pupoides coenopictus*, *Quickia concisa*, *"Sitala" jenynsi*, *Streptostele herma*, *Trochozonites (Crenatinanina) crenulata*, and *Tropidophora zanguebarica*), and turtle bones were recorded within the Tungi archaeological complex (Chapter 3.B.*I*), constituting less than 10% of the artefacts recorded during the survey (Anderson 2019: 71; Muratov 2010: 258-260). Marine shells were ubiquitous, including potential ground shell blanks, but no drilled shell was observed, finds which were unfortunately unphotographed. Turtle bone was found in a single concentration near the site of Tungi 1. The absence of non-ceramic artefacts on Cape Delgado was likely the result of vegetation obscuring visibility.

4.B.*I*.c. Arabic Inscription at Tungi

A coral tombstone inscribed in Arabic and partially obscured by lichen was recorded during the archaeological reconnaissance in Cape Delgado (Figure 4.4). Engraved in the late 19th century, when much of East Africa was transitioning from Arabic/Persian scripts to the Latin alphabet, the tombstone appears to have been produced by an artisan uncomfortable with Arabic resulting in nearly half the text being illegible (Juma 2018). Additionally, the lettering frequently crosses the incised frame on the left-hand side of the plaque, mistakes attributable to unfamiliarity with the language (Anderson 2019: 73).

The first line, "تاريخ يوم توفي", translated to "date of the day he died", and the second line, "سلطان", is "sultan" (John P. Cooper *pers. comm.* 26 April 2018; Rasheed El-Enany *pers. comm.* 20 June 2018). The third line was not able to be translated. The fourth line, "محمد", appeared to be the name "Mohammad" (John P. Cooper *pers. comm.* 26 April 2018). Line five, "في رمضان", read "month of Ramadan", while line six contained the date 1307 AH (1890 AD) (Salman Almahari *pers. comm.* 3 September 2018). The seventh and eighth rows of text could not be translated.

Figure 4.4: Inscribed plaque, Tungi 1.

The translated portions of the plaque record the death of a “Sultan Mohammad” who died 3 years after the dissolution of the Tungi Sultanate in 1887, marking the grave of one of Tungi’s final rulers, according to the royal lineage detailed in Adamowicz 2012 (24) (Section 2.C.*IV*.a). This grave postdates the Portuguese bombardment of the site, indicating that the town was not completely abandoned at that time. Interestingly, the inscription lacks the *Basmalah*, “in the name of God, the merciful, the compassionate”, the *Shahadah* “there is no deity but God, and Muhammad is the messenger of God”, or any specific Qur’anic verse, which have been common features of Muslim tombstones in the Western Indian Ocean since the start of the second millennium (Halevi 2004: 127). Although it is possible that the untranslated lines contain this text, it is improbable that the *Basmalah* or *Shahadah* were in rows seven and eight as these phrases typically precede the individual details on a Muslim tombstone (Halevi 2004).

4.B.*II*. Southern Quirimbas Archaeological Assemblage

Unlike Cape Delgado, the artefacts recorded in the southern Quirimbas Archipelago were not in their primary depositional contexts, as they were all part of a previous archaeological collection or objects found in a tidal zone (Section 4.B.*II*.a).

4.B.*II*.a. Ibo Island

The intertidal zone of Ibo town is littered with thousands of European and East Asian porcelains scattered amid dense mangroves. Blue-and-white East Asian porcelains, 18th-19th centuries, comprised the vast majority of finds observed at low-tide, but 19th century English blue transfer, Shell-edged, and sponge decorated wares were also noted (Torres, *et al.* 2016: 66).

Excavated materials from Stephens’s 2006 and 2007 archaeological campaign (Stephens 2006), stored within the *Fortaleza São João Baptista*, were also examined. Unfortunately, the bags in which the objects were stored had deteriorated, mixing artefacts and destroying relevant contextual data. General indications were that most of these artefacts were local, undecorated, low-fired pottery. Decorated Lumbo (13th-15th centuries) and Sancul (17th-19th centuries) series sherds, were identified according to their definitions in Sinclair (1985). The presence of Lumbo sherds indicates settlement on Ibo as early as the 13th century (Torres, *et al.* 2016: 59). Eighteenth to mid-19th century British and Chinese blue-and-white imports were also present. Earlier Ming Dynasty blue-and-white porcelain sherds have also been collected on Ibo Island (Torres, *et al.* 2016: 61).

4.C. Madagascar

Two seasons of fieldwork were undertaken by the author in northwestern Madagascar, producing the most comprehensive range of artefactual data for Boeni Bay to date. The exploratory visit to Boeni Bay in Summer 2018 tallied and photographed artefacts, but lacked systematic transects and recordation due to the absence of a formal archaeological permit. The Spring 2019 field season at Kingany was a fully realised archaeological investigation which recovered 42 kg of cultural material. Mahilaka, while visited in 2018, is not discussed below as it remains the focus of research by other archaeologists. For more details on Mahilaka and its artefact content see Radimilahy 1998.

4.C.*I*. Antsoheribory Archaeological Assemblage

The multi-component archaeological site of Antsoheribory is covered in substantial, dense ceramic scatters outside of the intertidal zone. Surface materials numbered in the tens of thousands, with concentration densities exceeding 20 sherds per metre^2. Cultural remains were almost exclusively undecorated, local ceramics and marine shell. Local pottery was low-fired, light brown to dark reddish-brown coloured, and occasionally red-slipped or burnished black. Localised exterior blackening and evidence of reduction and oxidation within sherd matrices was observed, characteristics typical of open firing or bonfire pit ceramic production, where regulation of temperatures and oxygen flow is difficult (Braekmans and Degryse 2017: 259; Livingstone Smith 2001: 993).

Nearly one in six local sherds tallied possessed a motif, primarily cross-hatching, dotted punctates, and heavy-lined or wavy incisions on their exteriors. Less than ten ceramic fragments with slipped and/or pigmented surfaces were recorded. However, all artefacts encountered on Antsoheribory were surface finds, directly exposed to conditions that erode delicate superficial decoration. It is possible that ochre and graphite coated samples were under-represented for this reason. Drilled local body sherds were found throughout the site, but in lesser quantities than decorated pieces. The function of these is currently speculative, but they could have been hung as home decorations, used as game pieces or counting tokens. Alternatively, these drilled ceramics were perhaps repaired in a manner similar to imported ceramics on the Swahili Coast, though this practice would be unique to Antsoheribory (Zhao 2015: 11).

Two imported ceramics, a fragment of green-glazed, polychrome vessel and a sherd of blue-and-white Chinese porcelain, were found during the inspection of Antsoheribory. The polychrome sherd belonged to a large shallow bowl or plate of Persian Gulf origin, dating to the 15th-17th centuries (Figure 3.17) (Timothy Insoll *pers. comm.* 18 October 2018). The blue-and-white porcelain was the type produced and traded widely under the Ming Dynasty in the 16th century (Zhao 2015: 9). Vérin previously recovered 16th-17th century Islamic monochromes, 18th century Islamic polychromes, green and yellow glazed pottery from Aden, 17th-19th century Chinese blue-and-white porcelains and celadons, 17th century Portuguese Alemtejo imports, and 18th century Nuremberg Bellarmine wares from small excavations at Antsoheribory Sites I (the mosque), III, and IV (stone residential structures) (Dewar and Wright 1993: 452; Vérin 1986: 303, 307). Also found were glass beads, European and Arab glass vessel fragments, gun flints, Dutch pipes, silver, and iron objects (Vérin 1986: 303).

Vérin noted that many tomb enclosures had inlaid imported ceramic bowls and large plates, none of which were seen in 2018 (1986: 293). It is possible that growing ecotourism to the island has impacted the artefactual assemblage.

4.C.*II*. Kingany Archaeological Assemblage

The following details the fine and bulk analysis of finds collected from Kingany Site II, the only site excavated for this thesis. Ceramic, faunal, and bead artefacts from each excavation unit are discussed in separate sections from other collected materials, as they represent nearly 90% of the total assemblage. Bulk analysis was completed by the author in the field and individual artefact inspection was done at the University of Exeter, or in the facility of a specialist. Tight stratigraphic control during probing pit excavation was not kept, a purposefully employed methodology, meaning sondage data is best suited to examine wider spatial trends. Conversely, artefacts from the two test units were extracted with near complete positional data to explore chronological trajectories in distinct loci. Bulk analysis complements the finer typological analysis of individual samples and should highlight intra-site utilisation patterns. Artefacts were provided accession numbers, from 1 to X, in the order which they were analysed. Accession numbers do not reflect the sequence in which the samples were collected, nor their relative intra-unit depositional position to one another.

Flotation of soil samples from PP11, TU1-6 through TU1-8, TU2-3, and TU2-5, was conducted in the field using buckets, a graded system of meshes, and well water. Additionally, 245 seeds were collected by hand from the following contexts: TU1-3, TU1-6, TU1-7, TU1-8, and TU2-1 through TU2-6. Dried material from wet sieving and seeds were given to an archaeobotanical specialist, Louis Champion, for analysis. Champion, unfortunately, found no relevant archaeological or phytolith specimens within the collection (Louis Champion *pers. comm.* 2 April 2020). The flotation residue was contaminated with insect bioturbation and the seeds, primarily unidentified species of grass, *Poaceae sp.*, and legume, *Fabaceae sp.*, were determined to be not carbonised or lithified (Louis Champion *pers. comm.* 7 April 2020). Champion believes that the seeds did not belong to the archaeological deposits from which they were collected, having been likely deposited by ants, termites, or other burrowing insects much later (Louis Champion *pers. comm.* 2 April 2020). Thus, archaeobotanical materials are absent from the analysis.

4.C.*II*.a. Site II Ceramic Analysis Overview

The local ceramics of Site II belong to the Antetikala and Kingany phases, initially described by Vérin (1975_a) and reexamined in the early 1990s (Wright, *et al.* 1996: 46, 51). The Antetikala phase, dating to the 12th-14th centuries, is based on a collection recovered from its namesake, near Katsepy, Bombetoka Bay (Wright, *et al.* 1996: 47). The chronological sequence of the assemblage was established based on similarities to Mahilaka (Wright, *et al.* 1996: 47). Antetikala group ceramics have “copious inclusions of medium to coarse quartz sand”, shale, and grog (Wright, *et al.*

1996: 46). Hole-mouth jars, the most common form in the series, possess either undecorated, "tapered" rims or "slightly flattened lips" (Wright, *et al.* 1996: 46). Lug handles and footed, tripod bases, like those of chlorite schist vessels, are also characteristics (Wright, *et al.* 1996: 46). Antetikala phase bowls typically have flattened or rounded rims, with rare instances of "appliqué [strip]" thickened rims (Wright, *et al.* 1996: 46, 48). Motifs include arc impressions, triangular punctates, and red slips (Wright, *et al.* 1996: 46, 48). It is worth noting that the "triangle punctate" motif defined by Wright in the Comorian Dembeni series, inspired by TIW, is completely different from "triangular punctate" and chevron designs at Kingany (Wright, *et al.* 1984: 38).

Despite radiocarbon dates placing early strata in the 11th century, the Kingany phase ranges from 1350 to 1550 (Wright, *et al.* 1996: 52). Vérin based this chronology on the relative presence and absence of certain key wares, specifically Longquan celadon and "Hadramauti black-on-yellow" (Wright, *et al.* 1996: 51-52). The Kingany series contained grainy pottery with approximately 10-20% "inclusions of angular quartz, sand or mica" (Wright, *et al.* 1996: 51). Vessels generally possessed smoothed surfaces, sometimes coated in red ochre, with rarer instances of graphite or coarse combing (Wright, *et al.* 1996: 51). Triangular impressions, creating a "false chevron" effect, were common (Wright, *et al.* 1996: 51). Closed vessels from the phase included everted rim, "incurved", and "hole-mouth jars" which were either plain or decorated with triangular or oval punctates, and appliqué (Wright, *et al.* 1996: 51). Open vessel forms include carinated, simple, and thickened rim bowls, decorated with triangular punctates (Wright, *et al.* 1996: 51). Cylindrical vessels, mimicking chlorite schist containers, were also found (Wright, *et al.* 1996: 51).

Non-diagnostic ceramics were defined as body sherds lacking decoration/glaze, portions of bases, handles, lids, rims, or shoulders and/or were too small to collect. Site II ceramics were primarily within the Munsell brown, orange, tangelo, and vermillion colour range. Darker sherds, approximately 60% of the assemblage, ranged roughly between 7.5YR 2/2 and 10YR 1/2 to 3/4. Burnt samples, including black and dark-grey specimens, were typically of the 2.5GY-7.5GY spectrum. Greater shade variation existed for lighter coloured specimens, with the following documented: 2.5Y 4/2, 2.5YR 4/4 to 4/6, 5YR 3/4 to 4/6, 7YR 4/4, and 10YR 4/2 to 4/4. There was general uniformity in ceramic colour throughout the assemblage, therefore individual sherd hue is discussed only if relevant.

Ceramic matrices were graded based on relative quality, i.e. coarse/poor to fine, visible temper, and fabric. Grain sizes were described according to the Krumbein *phi* scale, with samples ranging between fine to coarse sand (0.125 to 2 mm) with pebbles of greater than a centimetre in diameter being found in some specimens (Figure 4.5). Fabric grades are indicative of raw material purities, craftsmanship, and intent, e.g. low-fired and coarse storage vessels versus fine tablewares. Approximately 95% of the diagnostic local ceramics had coarse to medium fabrics with 189 sherds (34%) of exceptionally low quality. Only 5% (29) of analysed sherds possessed medium to fine inclusions. Undifferentiated fine sand granules were recorded within 221 (38%) sherds. It is unclear what percentage was intentional, as the inclusions could have been present in the raw clay. Quartz was the most common temper, appearing in nearly 30% (173) of specimens. All soil excavated at Site II was rich in similarly sized quartz pebbles. Quartz occurrences in pottery and the soil could be the result of ceramic decomposition, or indicative of locally sourced clay. Grog, fired and ground clay, was observed in 142 sherds (24%). Shell (23), charcoal (19), mica (3), and chlorite schist (1) tempers were also recorded. Approximately 60% (345) of analysed finds had more than one type of temper. Some 110 sherds had voids within their matrices, likely the result of trapped air bubbles prior to firing, or organic material deterioration upon exposure.

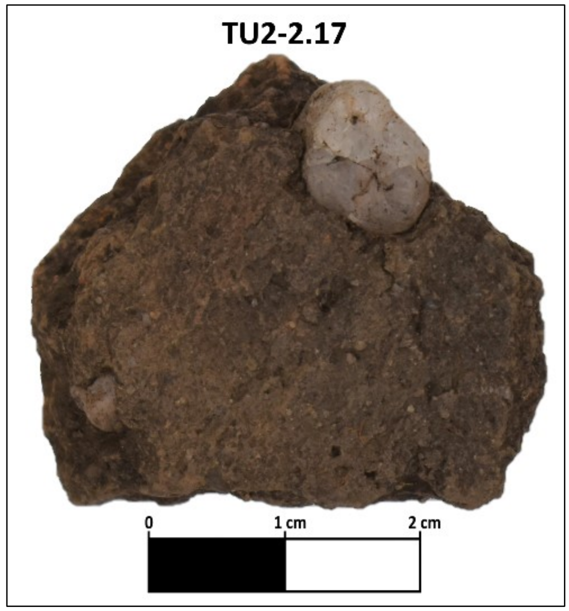


Figure 4.5: TU2-2.17, medium quartz gravel in matrix.

Sixty-nine percent (397) of analysed sherds had partially reduced fabrics, while 41 specimens (7%) were oxidised, characteristics evidencing a firing technology that utilised an inconsistent or uneven oxygen supply (Section 4.B.*I*) (Braekmans and

Degryse 2017: 259). Plausibly a similar bonfire technology was used at Kingany and Cape Delgado.

Complete vessel morphologies were inferred when possible, but generally the resolution permitted by sub-five-centimetre sherds (nearly 75% of total assemblage, 48% of diagnostics) was not sufficient enough to ascertain more than general forms. Bowls (109), carinated, closed (rim diameter less than estimated maximum vessel width), shallow (estimated vessel height significantly less than rim diameter), open (rim diameter nearly equal to maximum vessel width), and wide (rim diameter greater than 25 cm) were the most plentiful group. Cups and plates were also present in lesser quantities (eight examples combined). Jars (29) proved difficult to identify in an assemblage composed of primarily small sherds. Regardless, beakers (straight walled, cylindrical containers) and necked (rim gives way to constrained passage to main body) jars were found. “Hole-mouth”, globular jars (maximum width greater than rim diameter), utilised in the Comoros Archipelago and a key component of the Antetikala and Kingany series, were certainly present, but as their rim attributes are similar to those of the closed bowl, it was not possible to identify them within the assemblage (Horton and Chami 2017: 143; Wright, *et al.* 1996: 46, 51). Due to this uncertainty, closed bowls have the distinct possibility of being hole-mouth jars, with but a few exceptions, e.g. TU1-6.11 and TU2-1.1. The term “dish” (35) was used when a sherd possessed a portion of a vessel base likely not belonging to a jar, but more was not able to be determined.

Quantifying vessel forms should elucidate consumption patterns at Kingany, revealing possible localised Islamisation events. Dietary changes in line with general Islamic practice would hypothetically see an increase in serving/sharing type vessels, i.e. shallow dishes, wide bowls (35 cm in diameter or greater), and plates, with a simultaneous decrease in individual-sized pots or those which functioned as fermentation devices, e.g. small open and closed bowls/hole-mouth jars (Insoll 2017: 253; Pawlowicz 2013: 393). Diagnostic bowl samples favoured communal consumption with 26 examples (15% of identified forms) present, versus 12 small individualistic vessels (roughly 7%). However, when closed bowls/hole-mouth jars (41 or 22%), potentially suitable for fermentation, are considered, the ratio appears to skew towards a non-Islamic dietary tradition. Carinated bowls (16) were likely primarily cooking pots, and do not impact this interpretation. Ceramic vessels are but one indicator of diet and this topic is explored further via faunal remains in Sections 4.C.*II*.b.*ii*, 4.C.*II*.c.*ii*, and 4.C.*II*.d.*ii*.

Exactly 25% (144) of the 576 diagnostic samples were decorated with an appliqué (2), comb (1), grooved (10), impressed (8), incised (23), pierced (4), punctate (92), roulette (4), or scraped motif, or some combination of those. It was unclear whether grooves on the sherds were intentional or a manufacturing imprint. For this reason, these sherds were left out of the discussions of decorative patterns. While decorated samples were typically not the lowest grade of ceramics, 15% (28) of coarse sherds, there was no correlation between vessel quality and embellishment within the diagnostic assemblage. To clarify, the percentage of decorated average (30% or 107) and fine sherds (31% or 9) were nearly identical. Perhaps more friable, lower quality, pieces were once decorated but the ornamentation has worn off, or such pieces were not suitable/desirable to begin with. There were 172 burnished sherds (29%), with black (34), brown (93), dark brown (20), and red (10) shades recorded. Twenty-nine sherds possessed both decorated and burnished surfaces. One hundred and thirty-one sherds with slipped surfaces were recorded. Red slips were the most common (84), followed by brown (29), and finally black (18). Fifteen percent of slipped sherds (20) also had a motif. Over a third of slipped or burnished sherds had a finish on a single surface, i.e. interior or exterior. Combined, burnished, decorated, or slipped sherds accounted for 68% of the diagnostic samples, approximately 4% of the entire ceramic assemblage. However, it is probable that burnished or slipped sherds, without additional designs, were equally as common in the non-diagnostic assemblage as the analysed samples. No white-slipped/painted pottery was recovered from the 2019 excavations.

4.C.*II*.b. Probing Pits (PP1-PP25)

Twenty-five 50 cm^2 probing pits were excavated by the author during the 2019 Kingany campaign. Exactly 1,744 ceramics artefacts (7.896 kg, plus 2.354 kg of daub) came from the sondages, more than all other materials combined, 254 objects (2.114 kg), from the same units. Probing pits were grouped into the five zones, the central (PP1-PP9, PP21 and PP22), northern (PP17-PP20), western (PP10 and

PP11), and eastern open areas (PP12-PP16), and the cluster (PP23-PP25) west of the southern mosque (Section 3.C.*II*.a).

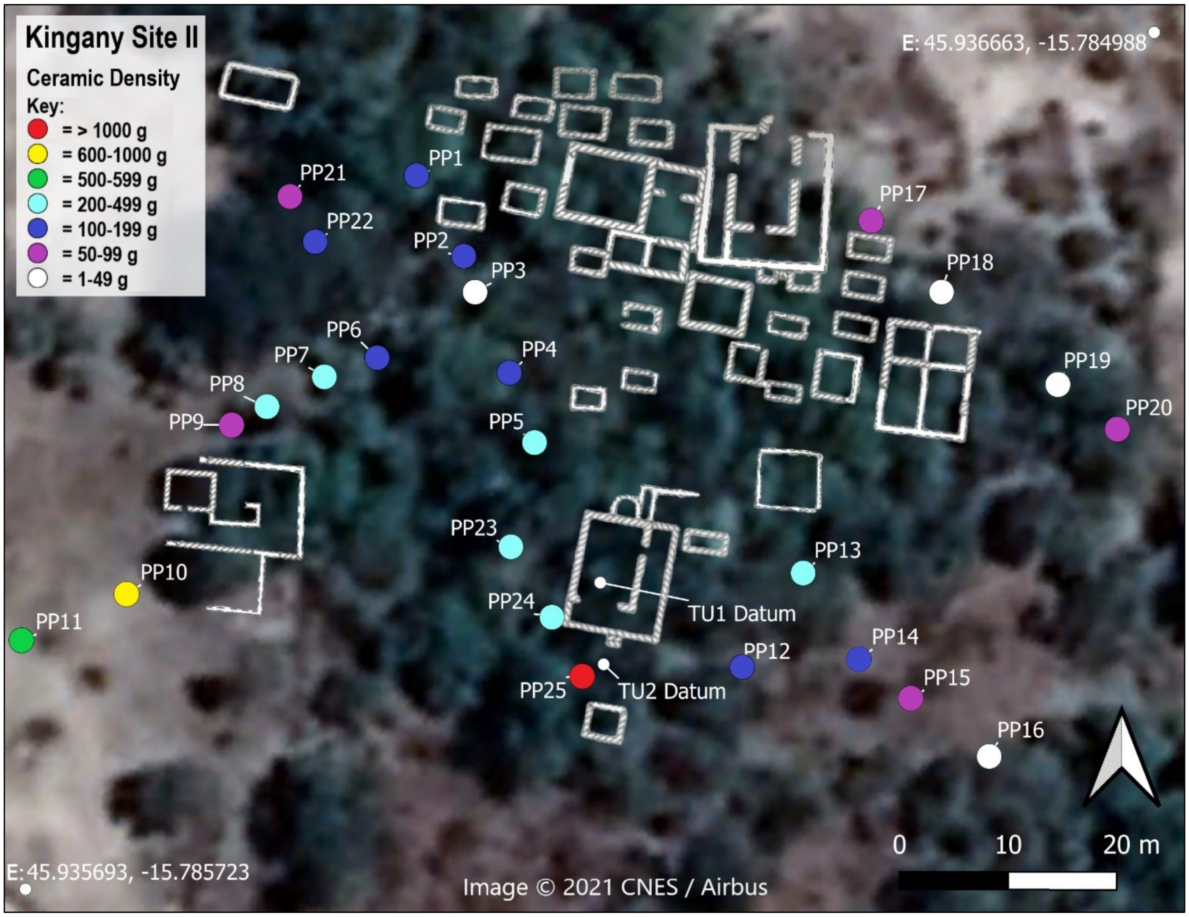


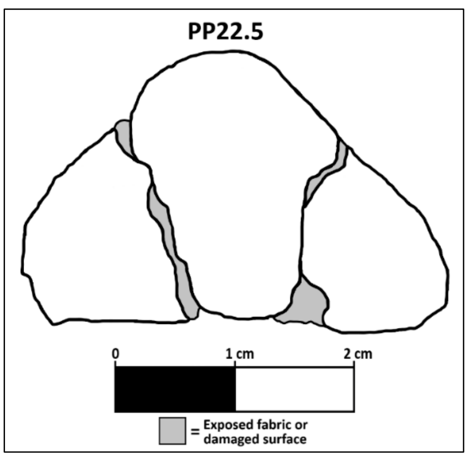
Figure 4.6: Density (bulk weight) of undecorated, local ceramics collected.

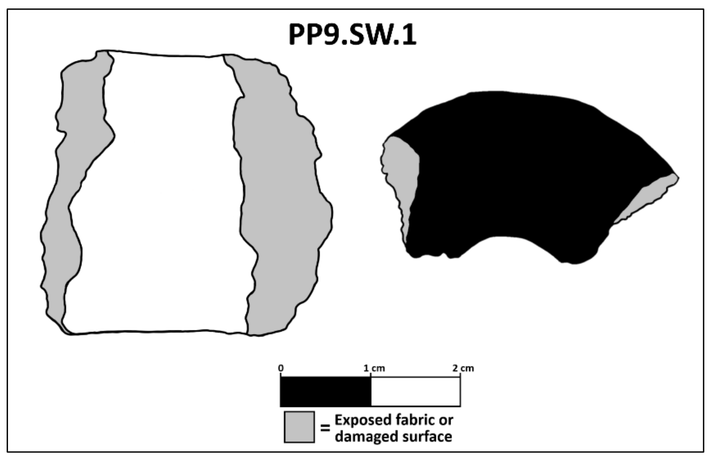
4.C.*II*.b.*i*. Ceramics

Analysis of ceramic artefacts from the sondages of Kingany Site II, approximately 87% of all objects collected from the units, are discussed below by excavation group.

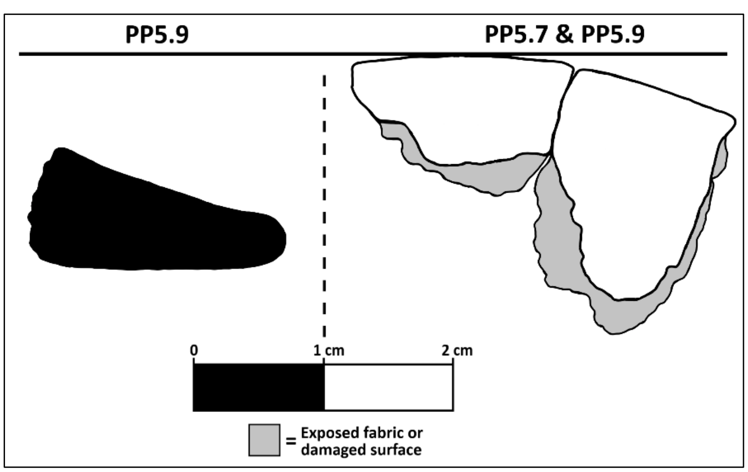
4.C.*II*.b.*i.1.* Central Open Area (COA) Ceramic Assemblage

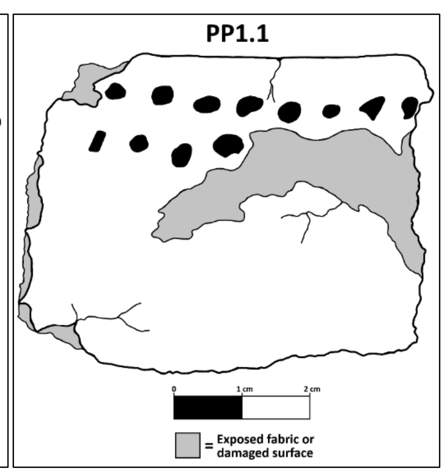
The COA was the third most productive zone in Site II with a combined local, non-diagnostic ceramic weight of 1,857.2 grammes (g) (449 sherds), averaging 168.8 g (41 sherds) per probing pit (Figure 4.6). Forty-three sherds (463.5 g), collected from PP1, PP2, PP4, PP5, PP6, PP7, PP8, PP9, and PP22 were analysed. Thirty-eight (88%) of the diagnostic samples were coarse to medium grained and 42% (18) of the samples had quartz temper. Charcoal (5%, 2), grog (14%, 6), and shell (7%, 3) inclusions were also recorded. Twenty-six sherds (60%) had reduced matrices and four (9%) were oxidised. Fourteen vessel forms, three closed, one carinated, and two open bowls, five jars, with conjoinable sherds PP8.5 and PP8.6, two lids, sherds PP5.7 and PP5.9 conjoin (Figure 4.9), and a simple dish, were identified. A ceramic trivet, PP22.5, and an undecorated, ceramic spindle whorl fragment, PP9.SW.1 (Figure 4.8) came from this zone (Figure 4.7). The second highest density of daub found in any unit at the site came from PP6. The daub density and distribution in the COA, 844.4 g total, indicate that a number of distinct impermanent structures occupied the area in the past (Figure 4.16). The COA assemblage is that of a domestic complex with home industry, substantiated by finds of storage and cooking pots paired with the tools of textile and possible ceramic production. No residential architecture exists in the space today.





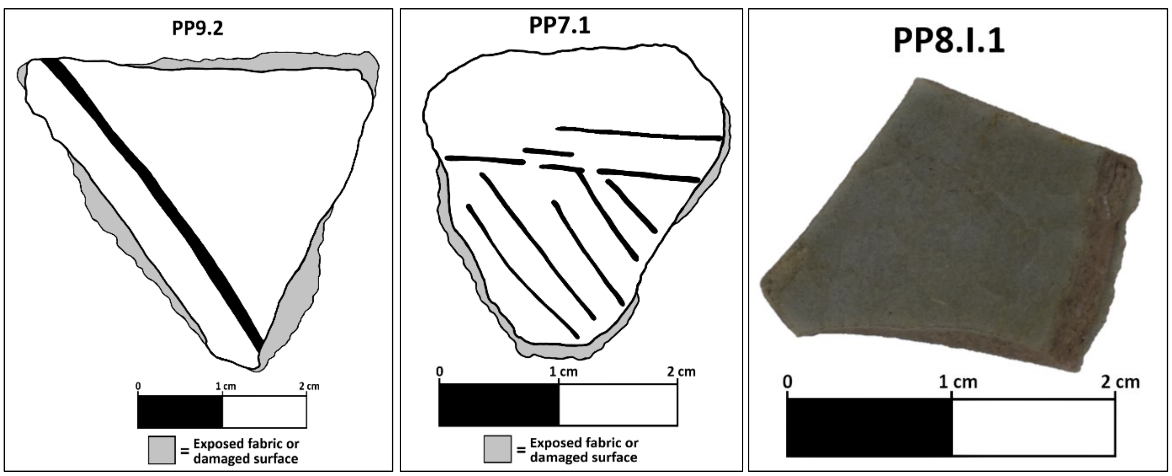
Figures 4.7 and 4.8: Left: PP22.5, ceramic trivet**; Right:** PP9.SW.1, ceramic spindle whorl profile.





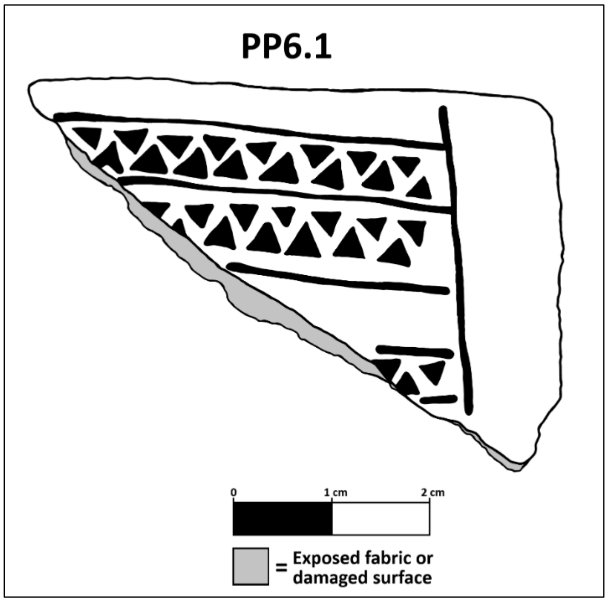
Figures 4.9 and 4.10: Left: PP5.7 and PP5.9, conjoinable lid**; Right:** PP1.1, punctate decorated sherd.

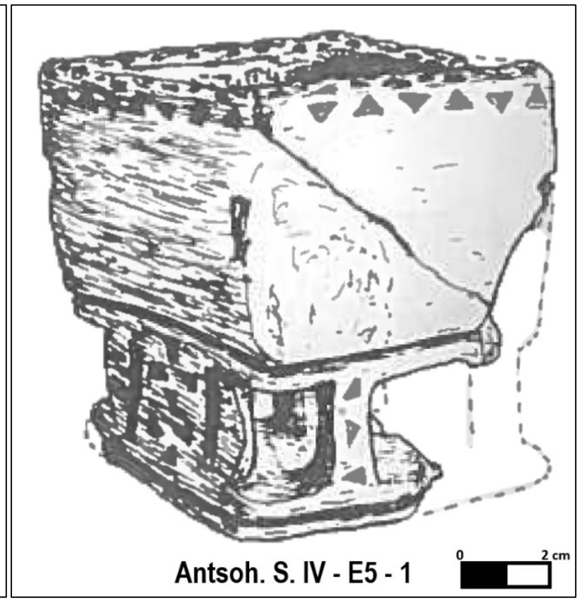
Approximately 3% (13) of COA ceramics were decorated. Motifs included irregular punctates in parallel rows (Figure 4.10) and wavy incisions similar to the "impressed wavy line" pattern of Mahilaka Occupation units *Ib-IIb*. Other motifs, such as the diagonal and horizontal incised lines (Figure 4.11) and alternating bands of triangular punctates, were evocative of the Irodo series (Radimilahy 1998: 148, 156, 171; Vérin 1986: 144). PP7.1 (Figure 4.12) is the only potential example of Kilwa "Wealed" ware, 13th-14th centuries from Site II (Chittick 1974$_{a}$: 327-328). Depictions of chevron motifs from Kingany (Vérin 1975$_{a}$: 319) match those from the 2019 excavations. Sixteen samples (37%) were burnished, while 6 sherds (14%) were slipped red or black.



Figures 4.11, 4.12, and 4.13: Left: PP9.2, sherd with incised line**; Centre:** PP7.1, possible "Wealed" ware**; Right:** PP8.I.1, Yuan Longquan celadon sherd.

A single imported ceramic, PP8.I.1 (Figure 4.13), was recovered from the COA. This Yuan Longquan celadon sherd was likely produced in southwestern China between the 13th-14th centuries (Hannah Parsons-Morgan *pers. comm.* 26 June 2019). Such celadons were distributed widely and are believed to have been desired for their beauty and magical properties throughout the Islamic world (Vainker 1991: 136-137; Zhao 2015: 8). Another sherd, PP6.1 (Figure 4.14) was similar to Yemeni incense burners, with their "excised triangles" and bands framed by incised lines (Le Maguer-Gillon 2011: 175; *pers. comm.* 10 January 2020). The sherd was from a vessel akin to the burner found at Antsoheribory, illustrated in Vérin 1986 (302) (Figure 4.15), but likely earlier in date. The light yellow-brown fabric of PP6.1, while rare, was within the colour spectrum for local clay, indicating that this piece might be





Figures 4.14 and 4.15: Left: PP6.1, decorated sherd**; Right:** Ceramic burner found at Antsoheribory Site IV, Vérin 1975a: 398.

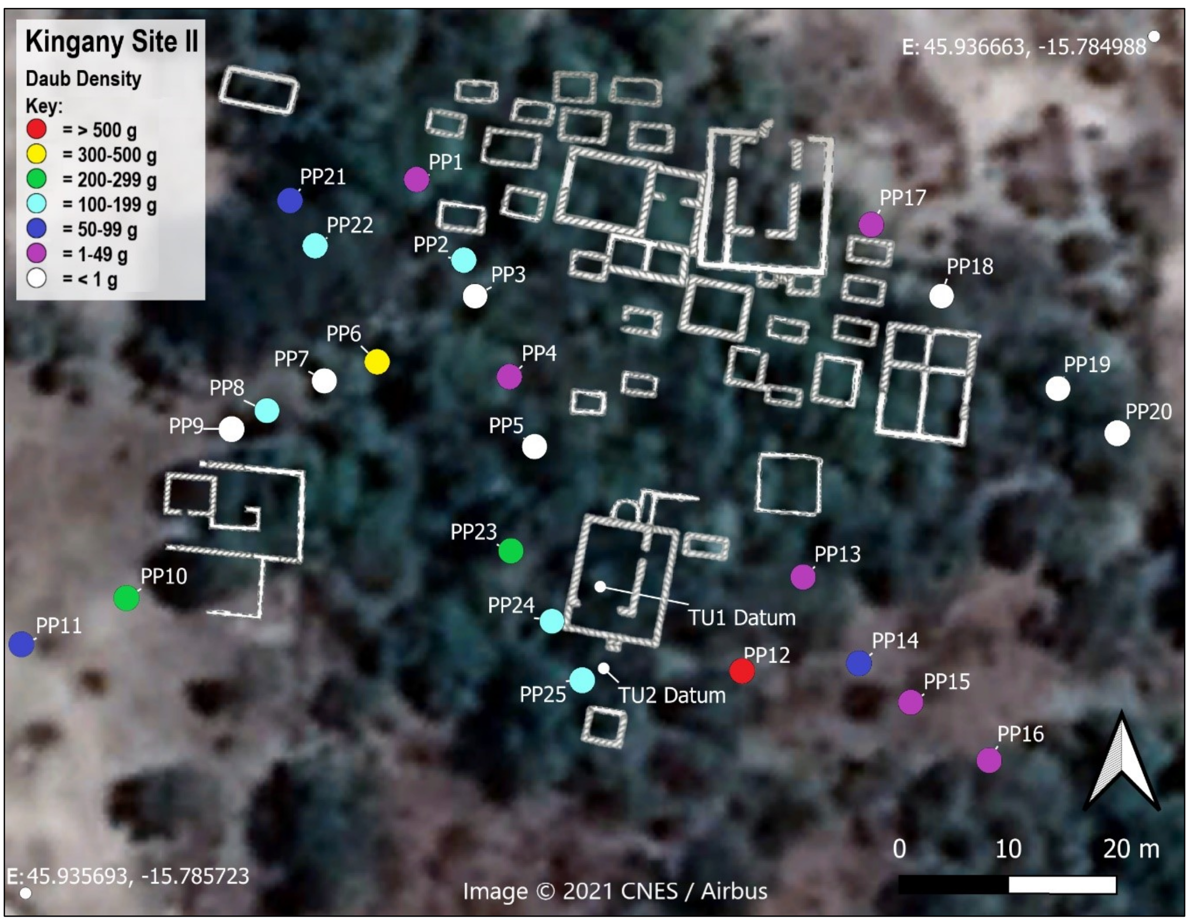
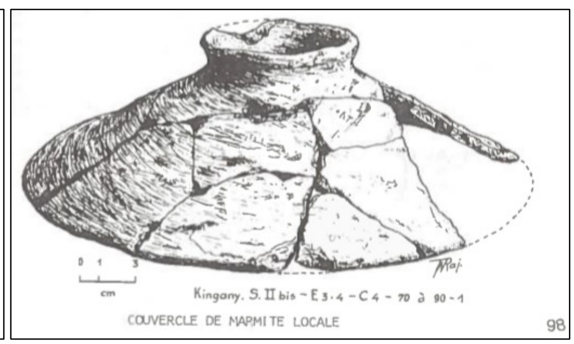


Figure 4.16: Density (bulk weight) of daub collected.

a local imitation, or colonoware. Northern Madagascar is thought to have been a major supplier of gum copal into Indian Ocean markets, with potential Malagasy samples found in the Hadhramaut, although recent studies have begun to question the precolonial chronology and longevity of the trade (Delclòs, Peñalver, Ranaivosoa, and Solórzano-Kraemer 2020; Radimilahy 2017). Among the many uses of gum copal was as aromatic incense, with which Swahili/Arab traders at Kingany were probably familiar (Radimilahy 2017).

4.C.*II*.b.*i*.*2.* Northern Open Area (NOA) Ceramic Assemblage

The four units of the NOA were the least productive (Figures 4.6 and 4.14). Seventy-two sherds (272.7 g) total, or 18 sherds (68 g) per unit, of local ceramics were recovered. PP17 and PP20 contained six diagnostic sherds combined. PP18 and PP19 contained none. PP17 was the only sondage in the NOA with a measurable amount of daub (9.9 g). NOA diagnostic ceramics were primarily (66%, 10) low to medium quality with visible quartz pebbles. Two samples had grog in their fabric. All but two sherds had evidence of reduction.



Figures 4.17 and 4.18: Left: PP17.3, ceramic lid**; Right:** Ceramic lid found at Kingany Site II *bis*, Vérin 1975a: 313.

No NOA specimens were decorated, though PP20.1 was burnished brown and PP20.3 was covered in a black soot. Both sherds belonged to bowls, one closed and one wide/open, respectively. PP17.3 was one of eight ceramic lid fragments collected in 2019. The grooved base of the lid, which forms a flanged channel, was designed to rest along the out-turned rim of its corresponding pot, forming a light seal. The curvature of the lid bespeaks a shallow, roughly conical complete shape. A nearly exact match was collected from Kingany Site II *bis* by Vérin (Figure 4.18) (1975a: 313). Seemingly absent from contemporary Madagascan coastal assemblages, lids of this form are found throughout Middle Eastern societies where the shape has become synonymous with the tagine. Tagines reportedly originated as early as the 9th century in northern Africa, after which the technology disseminated into the wider Islamic world (Snodgrass 2004: 983). Perhaps the presence of such vessels in Boeni Bay indicates long-term residence of Middle Eastern or Arab individuals in the Mozambique Channel at the start of the second millennium.

4.C.*II*.b.*i.3.* Western Open Area (WOA) Ceramic Assemblage

The WOA, the second-most productive zone of the entire campaign, contained 225 sherds (1,332.9 g) of local, non-diagnostic ceramics, averaging 112 sherds (666.45 g) per unit (Figure 4.6). Thirty-one diagnostic sherds (326.5 g) were recovered, 19 of which came from PP11. The assemblage included 10 bowl fragments, carinated, closed (Figure 4.20), shallow, and wide variants, 1 small cup piece, and 2 jar sherds. Three fragments, PP10.4-PP10.5 and 10.8, from the same wide bowl (in this case greater than 37 cm diameter) were collected (Figure 4.21). One undecorated, ceramic spindle whorl was also found. Most WOA diagnostic sherds (87%, 27) were coarse to medium grained, but less than 33% (10) of samples had quartz inclusions. Reduced sherds constitute 32% (10) of the samples while oxidation was noted on only 6% (2). PP10 and PP11 contained a combined 281.4 g of daub (Figure 4.16).

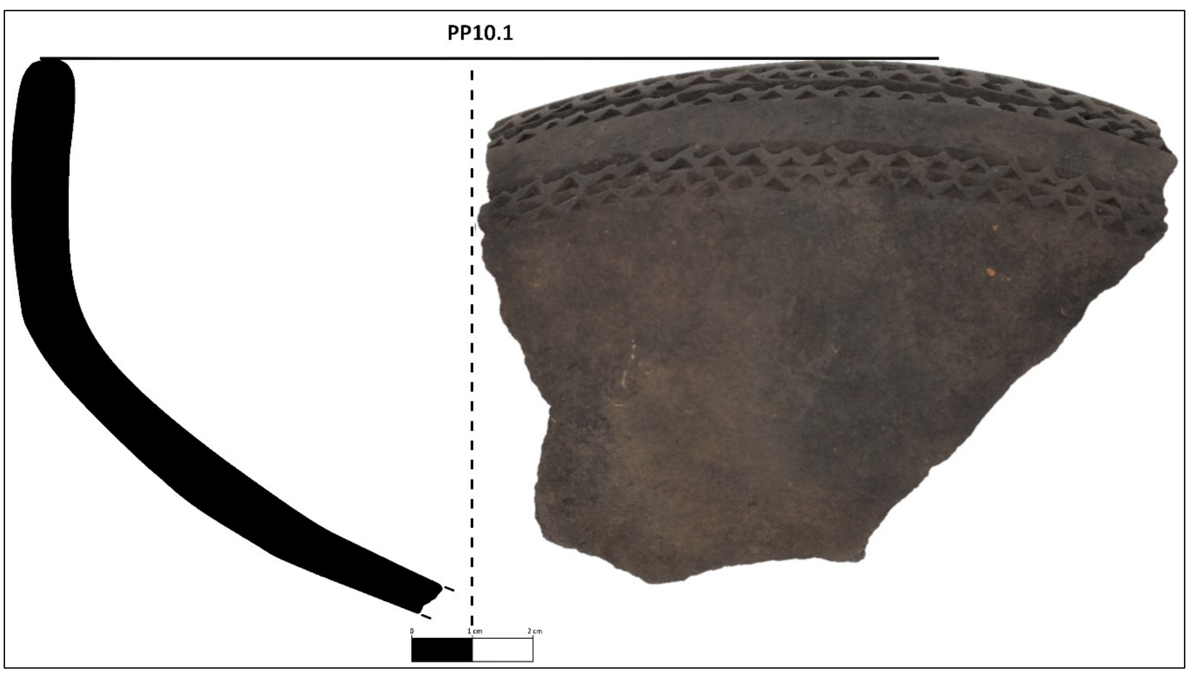


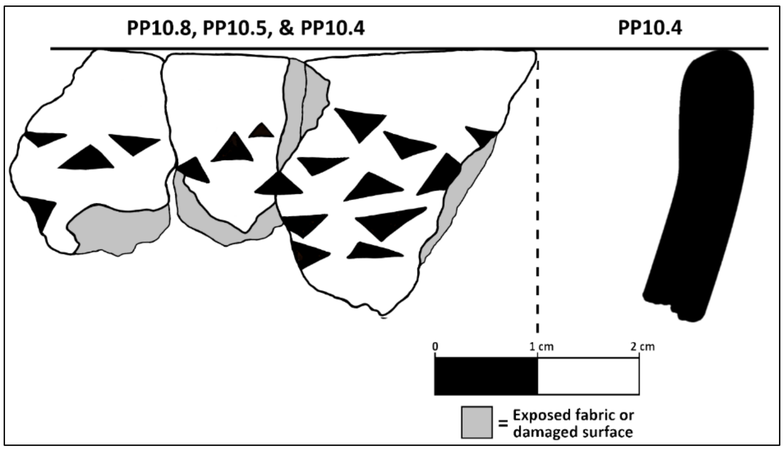
Figure 4.19: PP10.1, decorated bowl fragment.

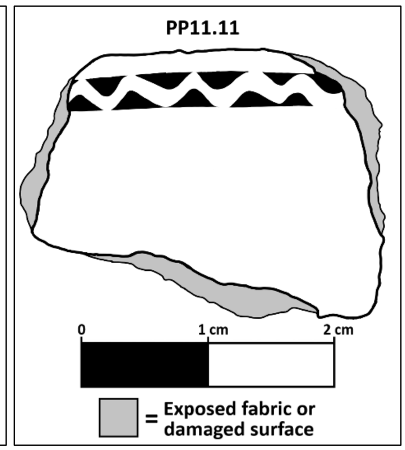
Figure 4.20: PP10.2, closed bowl fragment.

PP10.1 was a large, 23 cm rim diameter, brown burnished, shallow bowl which possessed two distinct bands of triangular punctates, made of four rows apiece (Figure 4.19). The simple, in-turned rim was identical to rims 11 or 28 from Mahilaka as defined by Radimilahy 1998 (150), and in-line with other WOA diagnostic samples. Of the nine vessels represented in the PP10/11 assemblage, five possessed in-turned rims. The alternating bands of triangular punctates on the exterior of PP10.1 are representative of the Antetikala and Kingany typologies and share commonalities with late-first/early-second millennium patterns of the Hadhramaut, specifically at Sharma and al-Shiḥir (Figure 5.19) (Le Maguer-Gillon 2011: 175; Wright, *et al.* 1996: 48). While this repeating motif was the most common at Kingany, found on 54% of decorated sherds, and present at contemporary sites in Madagascar and the Comoros, the excellent quality of PP10.1 exhibits the level of artisanship present in Boeni Bay. Five other sherds from PP10, and two from PP11, had triangular punctates. PP11.1, a sherd from a wide bowl, had diagonal incisions below the rim (Figure 4.23). PP11.11 (Figure 4.22) had a wavy-line, created by alternating triangular impressions, visually similar to the “excised triangles” or “cut zigzag” decorated ceramic pots and incense burners from Sharma, *circa* 10^{th}-12^{th}

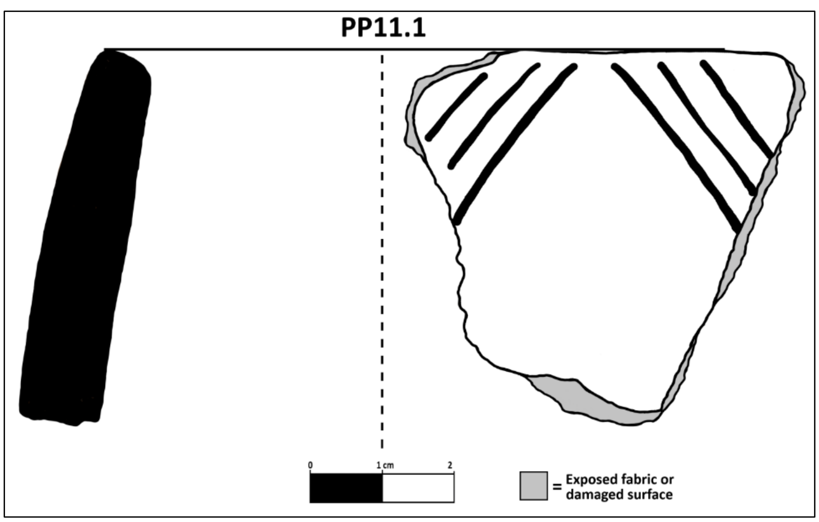
centuries (Le Maguer-Gillon 2011: 175; Rougeulle 2007: 242). Approximately 29% (9) of the WOA ceramic assemblage possessed a motif, while an estimated 61% (19) were coated in a slip or burnished.

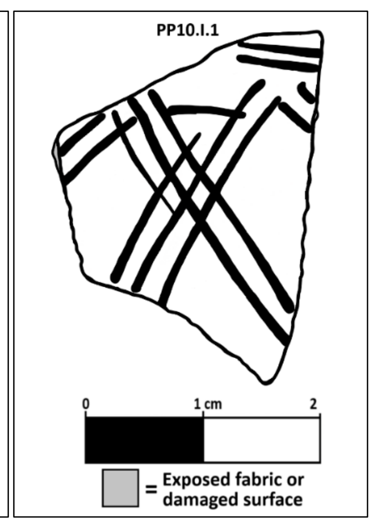
Vessel forms identified within the WOA were typical of the northern Malagasy coast and of the Antetikala and Kingany phases, following trends documented in Occupation units *Ib* and *IIa* at Mahilaka and Irodo (Radimilahy 1998; 152-170; Vérin 1975a; Wright, *et al.* 1996: 46, 51).





Figures 4.21 and 4.22: **Left:** PP10.8, 5, and 4, conjoinable bowl fragments**; Right:** PP11.11, decorated sherd.





Figures 4.23 and 4.24: Left: PP11.1, rim with diagonal incisions**; Right:** PP10.I.1, Yemeni ceramic water-jar fragment.

Few imported ceramic finds came from the WOA. A hatched incised, Yemeni water-jar, 12th-14th centuries, body sherd was found in PP10 (Figure 4.24). These jars were utilised throughout the western Indian Ocean, and appear in Kingany likely as a byproduct of trade in other commodities (Cuik and Keall 1996; Timothy Insoll *pers. comm.* 2 October 2019). Sixteen percent (3) of total imported ceramic finds at Kingany were possibly of Yemeni origin. It is probable that these finds are indicative of a significant connection between Kingany and the Hadhramaut. Additionally, a monochrome green-glazed handle fragment (0.5 g), likely produced in the 11th-13th century Persian Gulf, was found in PP11, though the piece's size inhibited identification (Hannah Parsons-Morgan *pers. comm.* 26 June 2019; Priestman 2013: 74, 699).

4.C.*II*.b.*i*.*4*. Eastern Open Area (EOA) Ceramic Assemblage

The EOA, PP12-PP16, contained 164 local ceramic sherds (945.1 g), averaging 32 sherds (189 g) per unit. Eighteen diagnostic samples from this collection were analysed, 72% (13) of which were of low to medium quality. Half (9) of EOA analysed sherds had reduced fabrics, and one was oxidised. Five sherds (27%) possessed quartz inclusions and one sherd had charcoal temper. The only example of chlorite schist temper at the site, PP14.1, was from the EOA (Figure 4.25). The style of PP14.1 appears to imitate a chlorite schist basin, i.e. high, straight walls and flat rim with decoration in relief. Similar bowl morphology has been documented at contemporary Malagasy sites, like Benavony in the northeast (Serneels, *et al.* 2018: 129). The chlorite schist temper is probably filings and powdered material from the lathe carving of soft stone during vessel production. This would accord with the hypothesis that chlorite schist objects were so valuable that waste from production was re-used and might also have had an additional symbolic/ritual function (Serneels, *et al.* 2018: 131).

General vessel categories were determined for eight sherds from the EOA diagnostic samples. Seven bowls were identified, two closed, one shallow, one footed, and two simple (Figure 4.26). A ceramic tuyère, PP12.4, was also found (Figure 4.27). This pipe served as an oxygen ingress into a small furnace, based on the diameter of the passage (less than 2 cm). The tuyère was formed from poor quality clay with large mineral inclusions and fired at a low temperature. The end product was likely expedient and disposable. PP12, where the tuyère was found, had the greatest daub density site-wide (566.3 g) (Figure 4.16). The EOA assemblage, while daub rich, had relatively few domestic ceramics.

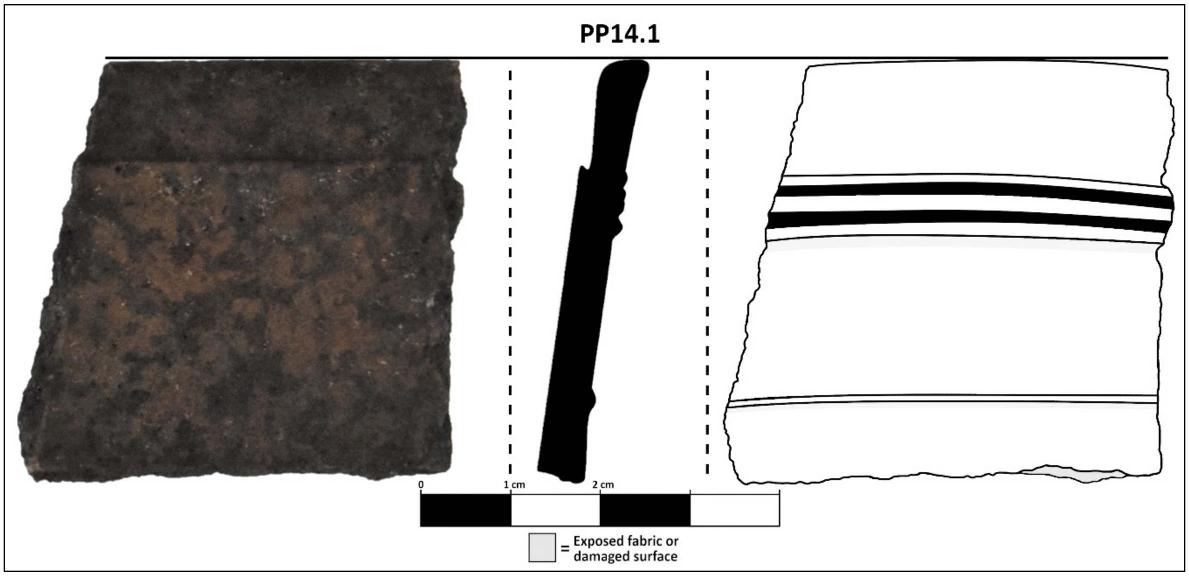
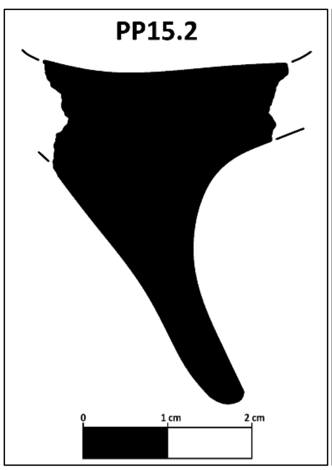
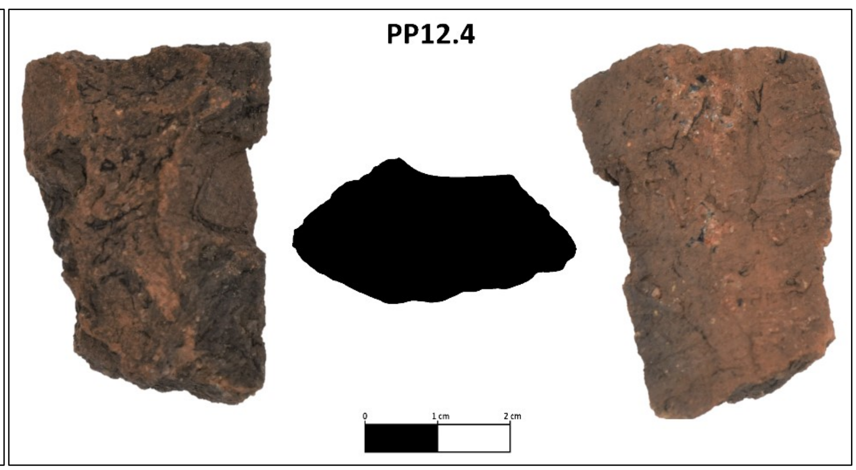


Figure 4.25: PP14.1, chlorite schist tempered ceramic sherd.

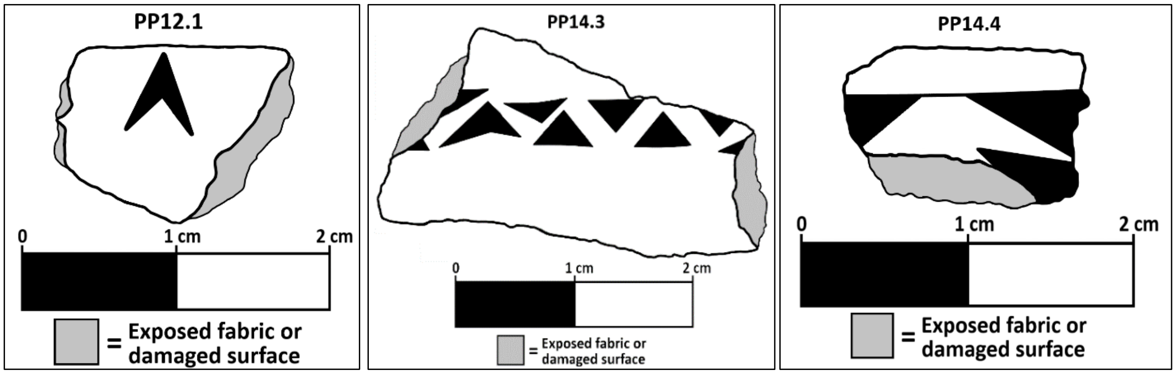




Figures 4.26 and 4.27: Left: Profile of PP15.2, ceramic ring-base**; Right:** PP12.4, ceramic tuyère.

Twenty-two percent (4) of the EOA samples were decorated, PP12.1, PP14.3, and PP14.4 with impressed triangular chevrons, and PP14.1 (Figure 4.25) with horizontal parallel lines in relief. The chevrons and alternating bands of PP12.1 and PP14.3 were both typical of the Kingany style (Figures 4.28 and 4.29) (Vérin 1975$_{a}$: 319-320). The horizontal incised lines and triangular impressions combination of PP14.4, while belonging to the Kingany Phase, was unique, evoking “impressed oblique dots” patterns from Mahilaka Occupation unit *IIa*, 12th-13th centuries (Figure

4.30) (Radimilahy 1998: 166). Eleven diagnostic sherds were burnished brown and one was red-slipped.



Figures 4.28, 4.29, and 4.30: Left: PP12.1, chevron decorated rim**; Centre:** PP14.3, decorated sherd**; Right:** PP14.4, decorated sherd.

A single imported ceramic, a piece of monochrome green-glazed ware (Figure 4.31), was found in the EOA. PP13.I.1 was similar to PP11.I.1, a *circa* 11th-13th century product of the Persian Gulf (Hannah Parsons-Morgan *pers. comm.* 26 June 2019), though the size of the specimen inhibited interpretation (Priestman 2013: 74, 104).

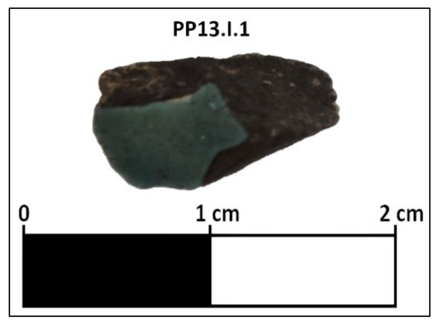


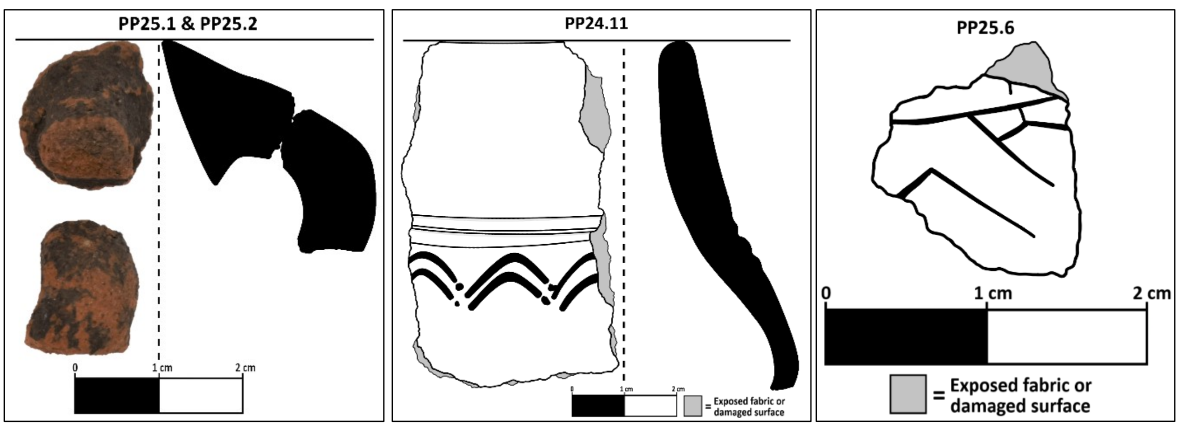
Figure 4.31: PP13.I.1, sherd of green-glazed monochrome.

4.C.*II*.b.*i.5.* PP23-PP25 Ceramic Assemblage

PP23-PP25 were located immediately west and south of the southern mosque. These sondages were the most productive, with 753 sherds (2,599.1 g), or 251 sherds (866.4 g) per unit, of local ceramics recovered (Figure 4.6). However, almost two-thirds came from PP25. Fifty-nine samples were analysed. These pits contained a greater than average proportion of medium to fine ceramics (12%, 7). The remaining 88% (52) of the samples were coarse to medium quality. Twenty-two sherds (37%) had quartz granules, 13 (22%) had grog, 4 (7%) had charcoal, and 3 (5%) had shell inclusions. Over 75% (44) of sherds from this group had evidence of reduction, while less than 8% (4) were oxidised.

Figures 4.32 and 4.33: Left: PP25.35, base of footed vessel**; Right:** PP25.36, base of footed vessel.

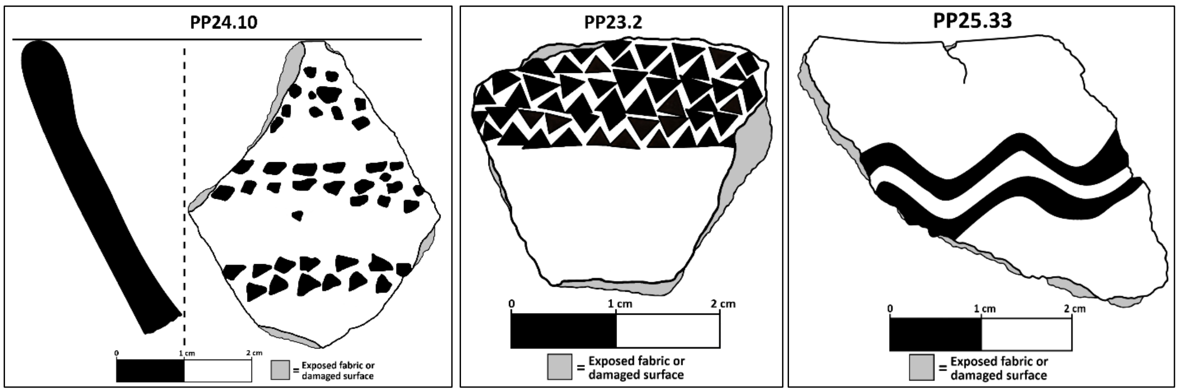
Seven bowls, simple (4), shallow (2), and closed (1), five jars, and three ring-base vessels were identified (Figures 4.32 and 4.33). A lid fragment (PP25.34), two conjoinable loop handle pieces (PP25.1 and PP25.2) (Figure 4.34), and five, undecorated and low-fired, spindle whorl fragments were also found. Approximately 540 g of daub came from PP23-PP25, 264.7 g from PP23 alone. Despite the proximity to the mosque, the ceramic assemblage of PP23-PP25 appears to be generally domestic.



Figures 4.34, 4.35, and 4.36: Left: PP25.1 and PP25.2, fragments of loop handle**; Centre:** PP24.11, arc impressed rim**; Right:** PP25.6, incised sherd.

Fifteen percent (9 sherds) of the assemblage from PP23-PP25 was decorated: arc impressions with horizontal lines in relief (1), incised lines (1), irregular punctates (1), pierced holes (2), rouletted bands (1), triangular punctates (2), and wavy incised lines (1) (Figures 4.35-4.39). The arc impressions on PP24.11 were produced by pressing a shell into wet clay, and is a motif associated with the Comorian Archipelago known as "dentate", first appearing at Dembeni phase sites, in the 8th-10th centuries, and present through the later Hanyundru series, 11th-13th centuries

(Andrianaivoarivony 2011: 343; Horton and Chami 2017: 143). This technique, rarely encountered on the northern Swahili coast, is found throughout the Mozambique Channel, at Manyikeni, Mozambique, and Mahilaka Occupation units *IIa* and *IIb* (Horton and Chami 2017: 143; Garlake 1976: 39; Radimilahy 1998: 162, 171; Wright, *et al.* 1984: 25). A strikingly similar sherd was part of the 1960s Kingany collection (Vérin 1975$_a$: 308). Dentate sherds are indicative of a Comorian and likely Mozambican presence at Kingany.



Figures 4.37, 4.38, and 4.39: Left: PP24.10, rouletted decoration**; Centre:** PP23.2, decorated sherd**; Right:** PP25.33, rim with wavy incisions.

PP25.6, is an incised sherd similar to those produced in *circa* 14th century Mahilaka (Radimilahy 1998: 171). Vérin included such sherds in the Kingany phase (1975$_a$: 317). PP24.10 (Figure 4.37) appears to have been decorated using a roulette technology, albeit an irregular one. This pattern was produced by rolling a preformed, cylindrical, stamp across the wet clay multiple times. This technology was widespread and developed independently on multiple continents, including India and in western/central Africa, millennia before the current era in the case of the latter, and it is probable that the technology dispersed into and throughout sub-Saharan Africa from either or both of these sources (Begley 1986: 54; Gosselain, *et al.* 2010: 2; Livingstone Smith 2010; Soper 1985: 45, 47). The use of roulette on PP24.10 suggests a mainland African presence/influence at Kingany. The wavy incised line pattern on PP25.33 is a common Malagasy style with analogues at Irodo, 12th-14th century, and in Mahilaka Occupation unit *IIb* (Radimilahy 1998: 171; Vérin 1986: 144). Parallel wavy patterns also appear in the Antsoheribory phase, 16th-18th centuries, but this timeframe is inconsistent with most finds at Site II (Wright, *et al.* 1996: 58). Despite a majority of imported ceramic finds in Kingany (12 or 63%)

coming from TU2, roughly three metres east of PP25, no imports were found in this group.

Twelve analysed specimens (20%) from PP23-PP25 were burnished, brown (9), black (2), and dark brown (1). Ten sherds (17%), including two conjoinable (PP25.1 and PP25.2), had slip coatings, including five red, four black, and one brown example.

4.C.*II*.b.*i.6.* Probing Pit Ceramic Summary

Collectively, the sondage ceramic assemblage is largely dissimilar to 12th-15th centuries mainland Swahili contemporary assemblages. This was expected as researchers have argued for a gradual increase in regional ceramic variance within East Africa during this period (Fleisher 2004: 106). While Swahili towns such as Kilwa Kisiwani, Shanga, and later satellites like Songo Mnara were producing combed and incised neck, “red painted”, “X” incised, and “Wealed” wares, Kingany and coeval communities in the Mozambique Channel favoured variations of triangular punctated bands, linear incisions, and arc/dentate impressions developed in the Comorian Archipelago (Babatunde Babalola and Fleisher 2015: 322; Horton and Chami 2017: 143; Radimilahy 1998; Vérin 1975a). The simplest forms of Site II decorations are roughly homologous to methods employed in the late-first millennium eastern African coast, e.g. horizontal incised lines and various punctates, but they differ greatly from the hatched and triangular incised traditions (Fleisher 2004: 106; Horton 1996b: 248-252). Vessel morphology also differed. Footed/raised rings, for example, account for approximately 71% of ceramic bases, followed by tripod pronged/legged stands (14%), and flat or pedestal bottoms (14%) at Site II. This does not align with the pedestal and flat base dominated artefact assemblages of the coastal 13th-16th century Kilwa technological complex (Babatunde Babalola and Fleisher 2015: 322; Chittick 1974a: 325-326; Fleisher 2004: 108-109).

4.C.*II*.b.*ii*. Fauna

Probing pit faunal analysis, not including shell, was completed by Lucien Marie Aimé Rakotozafy and Luciana Harifitiavana Rakotozafy of the *Institut de Civilisations-Musée d’Art et d’Archéologie*. Their report on archaeological material from PP2,

PP4, PP8, PP10, PP11, PP13, PP15, PP16, PP22-PP25 served as the principal source for this section, including tables and figures (Appendix III).

Class	Family	Species	Probing Pit (PP)
MAMMALIA	Bovidae (Bovinae)	*Bos* sp.	2, 4, 8, 10, 11, 23, 24
	Indeterminate	Indeterminate	22
REPTILIA	Testudinidae	*Aldabrachelys* sp.	23
	Testudinidae (terrestrial)	Species. 2 medium-sized tortoises	11, 24
	Testudinidae (terrestrial)	Species. 3 small tortoises	11, 16
FISH	Osteichthyes	Species 1 (small)	24
	Osteichthyes	Species 2 (medium size)	11, 24
	Osteichthyes	Species 3 (undetermined)	25
	Osteichthyes	Species 4 (undetermined)	25

Table 4.1: Table of probing pits faunal remains.

Eighty-six fragments (93.1 g) representing 8 species from 3 taxa, Mammalia, Reptilia, and fish from the Osteichthyes superclass, were present in the sondage archaeological assemblage (Table 4.1). This material comprised less than 10% of the total faunal assemblage from the 2019 campaign. These specimens were highly fragmented, resulting in a minimum number of individuals (MNI) effectively equal to one.

Bos sp., wild and domestic cattle, represented 55% (51 g) of the total faunal assemblage (Figure 4.40). Bovine remains were found in half of the sondages, evidencing their central role within the Kingany community, mirroring the Comorian and Malagasy diets today (Radimilahy and Crossland 2015: 505; Wright 2017$_b$: 279). Multiple tortoise species comprised the second-most abundant family present (21 g or 23%). One giant tortoise species present, *Aldabrachelys abrupta*, is now extinct. Partially “charred elements” tortoise carapace fragments from PP11 were the only evidence of cooking within the sondage assemblage. Consumption of tortoises was common practice prior to the arrival of Islam in the Mozambique Channel, and evidence suggests that it was perpetuated following Islamisation despite the practice being *ḥarām*, according to *Shāfiʿī* jurisprudence, the dominant Sunni *madhhab* in the region.

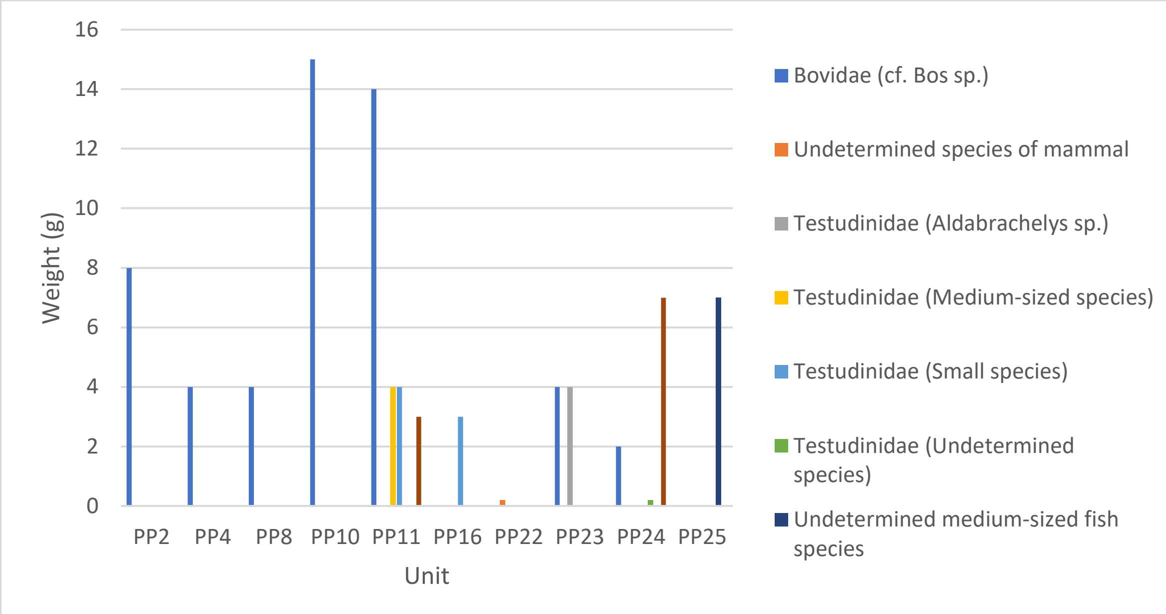


Figure 4.40: Weight (g) of probing pit faunal remains.

4.C.*II*.b.*iii*. Beads

Bead analysis was completed by Ms. Bako Rasoarifetra of the University of Antananarivo whose report is drawn upon here (Appendix I). One hundred and twenty beads were recovered and were analysed as a single assemblage. This decision facilitated the production of useful statistical comparisons from what would have otherwise been singular data points. Fourteen glass beads (1.1 g) were recovered from PP6 (1), PP12 (2), PP18 (1), PP22 (1), PP23 (1), PP24 (3), and PP25 (5). No glass sand deposits are known in the region, and evidence for bead production was not found. Thus, all glass beads are likely imports (Vérin 1975b: 1028). Site II samples were not chemically tested, thus specific glass compositions are not known. No carnelian or metal beads were found despite their recovery from contemporary Mozambique Channel sites (Robertshaw, *et al.* 2006: 93).

Size	1.2 – 2 mm	2 – 3.5 mm	3.5 – 5 mm	5 – 9.9 mm	Indeterminate	Total
PP	2	2	8	1	1	14

Table 4.2: Probing pit bead sizes.

All Site II beads could be classified as “Trade-wind”, “Monsoon”, or “Indo-Pacific” types which were distributed widely in the Indian Ocean, with possible origins in India, the Middle East, or Southeast Asia (Robertshaw, *et al.* 2006: 106; Wood 2011: 71). The sondage beads were predominately (8 or 57%) between 3.5 and 5 mm. These were classified as small to medium (Table 4.2). Three other size categories, 1.2 – 2 mm or minute, 2 – 3.5 mm or minute to small, and 5 – 9.9 mm or medium to large, are represented in nearly equal proportions. Few large (7%, 1) and many small to medium (93%, 13) beads were collected. All sondage beads were drawn and finished into one of five simple shapes: “annular” or ring-shaped, barrel, disc-circular, spherical-flattened or oblate, or tubular (Table 4.3). This process involved stretching, or drawing, out thin tubes of molten glass from a hollow mass, which would then be chopped into individual beads and reheated to round the edges (Roy 2000: 98; Wood 2011: 68). Drawn glass techniques are thought to have replaced “wound bead” manufacturing by the 12th century (Wood 2011). Spherical-flattened beads were the most common shape (50%, 7) found in the probing pits, which, when considered with the average specimen diameter, parallels patterns visible through all occupational phases at Mahilaka (Robertshaw *et al.* 2006: 94).

Shape	Annular	Spherical-Flat	Disc-Circular	Barrel	Tubular	Debris	Total
PP	1	7	2	2	1	1	14

Table 4.3: Probing pit bead shape.

Microscopic observation revealed that all of the beads were produced with an opaque or translucent glass paste. While partially translucent samples comprised a majority (71%, 10) of the sondage assemblage (Table 4.4), transparent beads were completely absent, analogous to coeval Malagasy collections, namely Mahilaka and Vohémar, as well as distant locales such as Harlaa, Ethiopia, which Kingany shares a number of artefactual characteristics with (Timothy Insoll *pers. comm.* 12 March 2020; Radimilahy 1998). Opaque red beads, called Indian Red, black, blue, green, and yellow beads were present. Black, blue, and red beads were similar in colour, shape, and form to beads from 12th-15th century contexts at Mahilaka and found as grave goods at Vohémar (Radimilahy 1998). Yellow beads were more akin to those from 8th-12th century Sandrakatsy, in Antongila Bay, eastern Madagascar, matching both hue and shape (Robershaw *et al.* 2006: 94). Trade bead preferences at Kingany differed from its immediate neighbors, likely speaking to the complexity of the population present.

Colour	Red	Blue	Green	Yellow	Black	Total
Opacity	Opaque	Translucent	Translucent	Translucent	Opaque	
PP	1	3	4	3	3	14

Table 4.4: Probing pit bead colour.

4.C.*II*.b.*iv*. Other Material

Chlorite schist, glass, metal, shell, and some stone objects were also recovered from the probing pits. For analysis, these are separated into excavation clusters, i.e. central (PP1-PP9, PP21 and PP22), northern (PP17-PP20), western (PP10 and PP11), and eastern open areas (PP12-PP16), as well as those adjacent to the southern mosque (PP23-PP25).

4.C.*II*.b.*iv*.*1*. COA Assemblage

A total of two chlorite schist fragments were found in the COA, 11% of the schist assemblage by count (2% by weight). PP6.C.1 was drilled on one side. It appears that, much like imported ceramics in East Africa, chlorite schist vessels were curated/repaired to prolong their lifespan (Zhao 2015: 11). Repair techniques included drilling holes and “sewing” vessels together with metal wire (Zhao 2015: 11). Alternatively, PP6.C.1 might have been re-used as a net weight (Dewar and Wright 1993: 436).

A total of three fragments of aqua-coloured glass (0.8 g) were recovered from PP4 (1) and PP8 (2). These shards were 14% of total glass weight at Site II. No evidence of glass production or glass sands within the vicinity of the Boeni Bay have been found, recommending that these artefacts were imported, but glass composition has not been chemically analysed (Vérin 1975$_b$: 1028).

Ten metal samples (13.2 g) were recovered from PP2, PP5, PP9, PP21, and PP22 (Figure 4.41). The COA contained 15% total of Site II metal by weight, 5% by count. Almost all metallic finds from this cluster were iron prills (6), pellets produced from smelting and smithing. Slag (3) and an irregular iron clipping were also found. PP22 contained trace amounts of mica (0.1 g). Mica has been found in association with iron furnaces at Malagasy sites contemporary to Kingany's, e.g. Benavony (Serneels, *et al.* 2018: 149). However, at Benavony it was unclear if mica had a role in metallurgical processes or if it was collected for its novel appearance (Serneels, *et al.* 2018: 149). Radimilahy has proposed that mica was used as temper for ceramic making (Radimilahy 1998: 189). The low density of metal objects in the COA suggests that only household/small-scale smithing occurred.

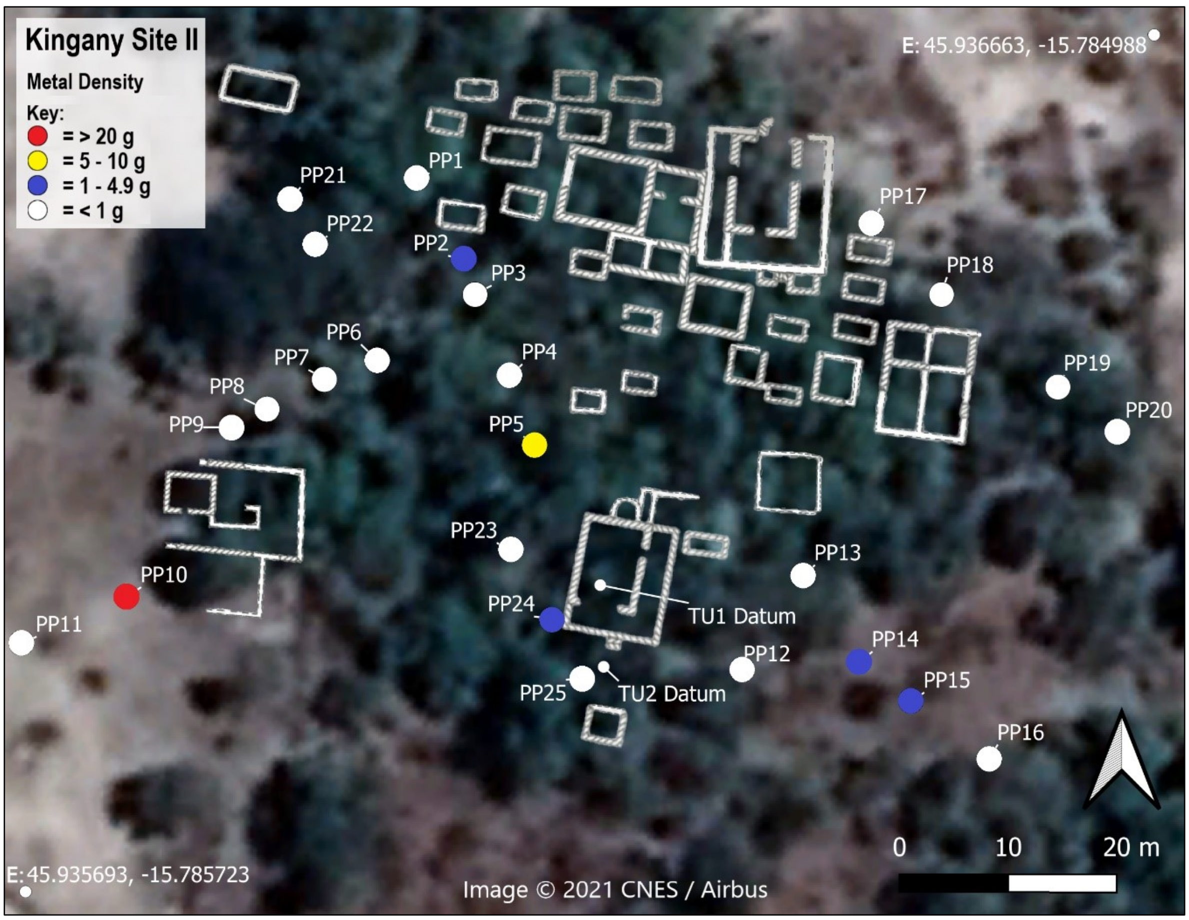


Figure 4.41 Density (bulk weight) of metal collected.

Twenty-two shells (281.5 g) from three marine species were collected from PP1-PP5 and PP7-PP9. PP21 and PP22 contained no shell. *Oxymeris maculata*, or marlinspike auger, dominated with 18 specimens collected, followed by *Arcidae Andara antiquate* or ark clam (3) and the only example of *Fasciolariidae Fusinus tuberculatus* (1) found in the entire site. Marlinspike auger and ark clam are edible species. Thirteen (62%) samples were less than 10 cm in diameter and displayed no evidence of heating and, therefore, were probably fishing bait. *Oxymeris maculata*, like *Terebralia*, still serve as fishing bait in northwestern Madagascar (Radimilahy 1998: 195). *Fasciolariidae Fusinus tuberculatus,* an inedible species, recovered from PP5 was likely deposited by natural means, e.g. hermit crab.

Thirty stone objects (390.4 g) were collected from the COA (excluding chlorite schist, previously discussed). These finds were mostly quartz fragments (21) measuring five centimetres in diameter or smaller. Other stones included a sizeable (15 cm diameter) sandstone fragment (PP8), three sub-10 cm diameter pieces of limestone (PP8), and a small sandstone cobble (PP22). The quartz was likely residue from degraded ceramics, while the limestone and sandstone almost certainly debris from the dismantling of standing structures (Wright, *et al.* 1996: 53).

4.C.*II*.b.*iv.2.* NOA Assemblage

The NOA had the smallest artefact assemblage of any zone. A single piece of undecorated, chlorite schist was found (Figure 4.42). PP17.C.1 was drilled and repaired with iron stitching, evidenced by rust within the drill hole. Christoph Nitsche, University of Fribourg, examined a thin section of PP17.C.1. This piece was most similar to samples from the quarry of Tsarahiaka, in the Antsampanela valley, west of Vohémar. However, Nitsche emphasised that the petrographic signature of PP17.C.1 “was not definitive for a single quarry”, but did place its likely origin “along the longitude of Vohémar” (Appendix II).

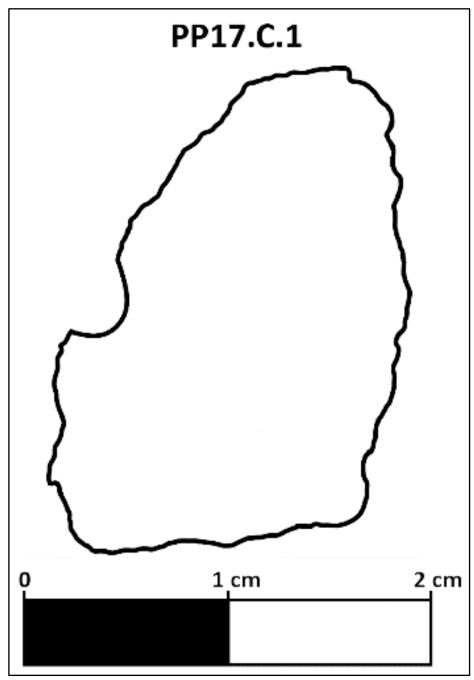


Figure 4.42 PP17.C.1, drilled chlorite schist sherd.

No vessel glass, few metal (1 iron prill weighing 0.1 g), and stone (2 quartz pebbles and 1 sandstone totaling 21.2 g) artefacts were recovered from the NOA. Shell finds, which included ark clam (1), marlinspike auger (2), and an indeterminate fragment, were less than 1% (5.8 g) of the total site-wide shell assemblage.

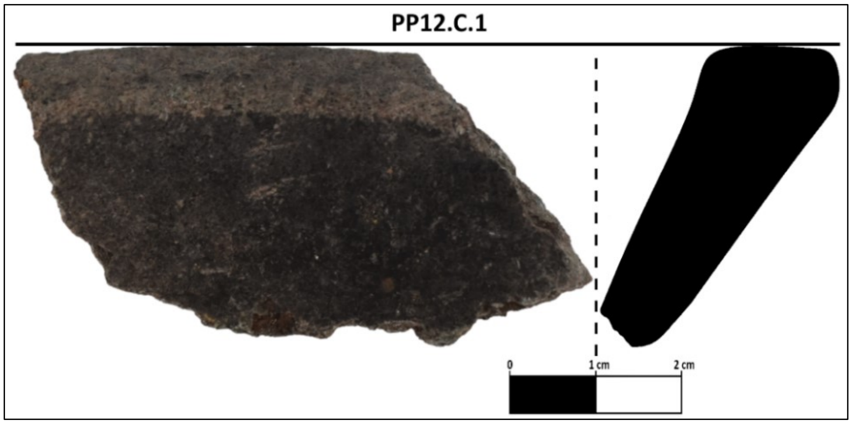
4.C.*II*.b.*iv.3.* WOA Assemblage

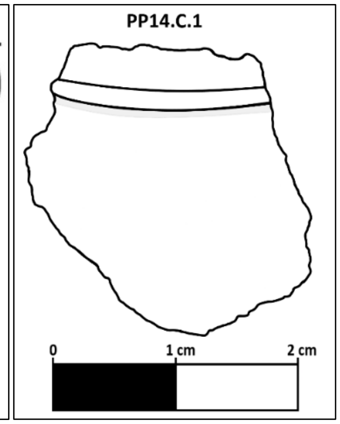
The WOA had only a single undecorated fragment of chlorite schist (PP10.C.1) and a lone shard of aqua-coloured glass (0.4 g). However, the only coin from Kingany was found in PP11. This corroded copper coin with illegible text has not been cleaned or analysed. Three small pieces of iron slag were also found.

PP10 contained no shell, but PP11 had the most shell of any probing pit, with 20 pieces (96.5 g), including 16 samples from 3 edible species, *Arcidae Andara antiquate*, *Oxymeris maculata*, and *Pteriida* (oyster). Two *Neritidae* specimens, sea snail family, and two unidentified fragments were also collected. Shell density in PP11 was nearly six times greater than the collective sondage average (3.5 shells) and roughly four times the weight (25.83 g per unit). Burnt specimens belonging to edible species evidence human consumption. A soil sample from a darkened, charcoal-rich, patch or potential hearth in PP11 was unfortunately contaminated, and the data was unusable. Seven stones (100.4 g), 5 quartz and 2 sandstone, were collected from PP10 and PP11. These finds were small, less than 5 cm in diameter, likely naturally occurring, and unremarkable.

4.C.*II*.b.*iv.4.* EOA Assemblage

One fifth of all chlorite schist finds from the 2019 field season were found in the EOA. Four sherds (65 g), PP12.C.1, PP14.C.1, PP15.C.1, and 15.C.2, were collected, 17% of bulk chlorite schist weight. PP15.C.1 and PP15.C.2 were undecorated, while PP12.C.1 and PP14.C.1 possessed diagnostic features (Figures 4.43 and 4.44). While PP12.C.1 was decorated on the exterior with parallel lines in relief, known as the Triple stripe “Vohémar-Style”, this flat rimmed, graphited interior, bowl fragment was non-typical of Malagasy chlorite schist vessels (Griffin 2011; Christoph Nitsche *pers. comm.* 16 November 2020; Wright, *et al.* 1996: 51). However, an optical mineralogical examination of PP12.C.1 revealed characteristic similarities to samples from an unknown extraction area thought to be part of the Andrafialava quarry site, south of the Rangovato massif, southeast of Milanoa (Appendix II). PP14.C.1 was decorated with two horizontal lines, only one of which survived, typical of the Vohémar-Style thought to have been common between the 12th to 14th centuries (Christoph Nitsche *pers. comm.* 11 November 2020).





Figures 4.43 and 4.44: Left: PP12.C.1, chlorite schist rim**; Right:** PP14.C.1, chlorite schist sherd.

The EOA contained no vessel glass. Only three metal artefacts, two iron prills (3 g) and a three-centimetre-long corroded iron rod (1.3 g) were found. The latter, from PP14, was unique in the 2019 campaign. This length of rod was likely a blank intended for smithing. Shell (44.6 g) and stone (3.4 g) finds from the EOA were generally unremarkable. Most shells present (86%, 6) were small specimens of two recurring edible species, *Oxymeris maculata* and *Pteriidae*. Similarly, collected stone from PP12-PP16 was largely the omnipresent quartz pebbles.

4.C.*II*.b.*iv.5.* PP23-PP25 Assemblage

While PP23-PP25 were the most productive sondages in terms of pottery, this was not the case for non-ceramic artefacts. PP25 had a single fragment of undecorated, chlorite schist, PP25.C.1, and three fragments (0.5 g) of bottle green glass. Five metal objects (2 g), an iron clipping, prills (3), and a piece of slag, were found in PP23-PP25. This low density of metal artefacts was surprising, as TU2, adjacent to PP25, had 171 of such finds (Section 4.C.*II*.d.*iv*). Such a stark disparity between two units in close proximity might evidence tight spatial restrictions for activities at the site.

Ten shell artefacts (36.6 g) came from PP23 and PP25. Only marlinspike auger was identified as 30% (3) of finds were too fragmentary to analyse. A sandstone sharpener was found in PP24. Whetstones similar to this piece were ubiquitous in

Mahilaka Occupation Unit *Ib*, 10th-13th centuries (Radimilahy 1998: 182, 194). PP25 had 6 pieces of quartz, including the only two rock crystal quality examples from the season. Pegmatic quartz in Madagascar was primarily collected from riverine systems around Vohémar or in Antongila Bay, approximately 250 km to its south (Horton, *et al.* 2017: 110). The stone finds from these two sondages collectively weighed 904.9 g.

4.C.*II*.c. Test Unit 1 (TU1)

TU1, measuring 1 m (E/W) by 2 m (N/S), was located within the *muṣallā* of the southern mosque (Figure 3.34). Some 605 ceramic items weighing 3.298 kg, plus 32 g of daub, were collected from TU1. Additionally, 1,472 (1.319 kg) of non-ceramic objects (beads, fauna, glass, iron, and stone) were recovered, primarily from the lowest 3 strata (TU1-6 though TU1-8). This section examines archaeological finds beginning at surface level and working backwards, i.e. from youngest to oldest contexts.

4.C.*II*.c.*i*. Ceramics

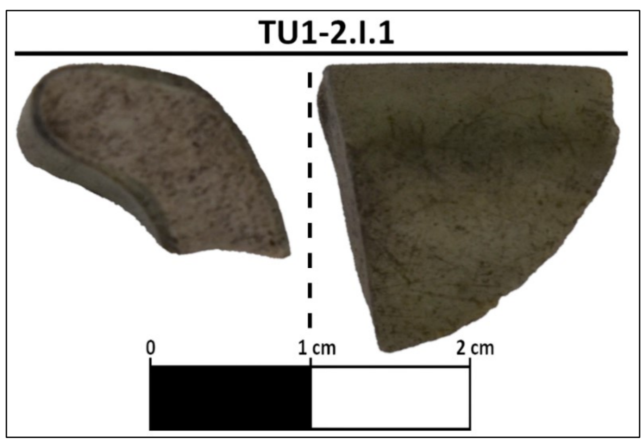
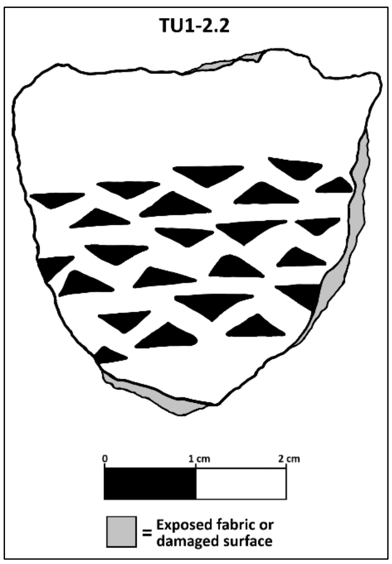
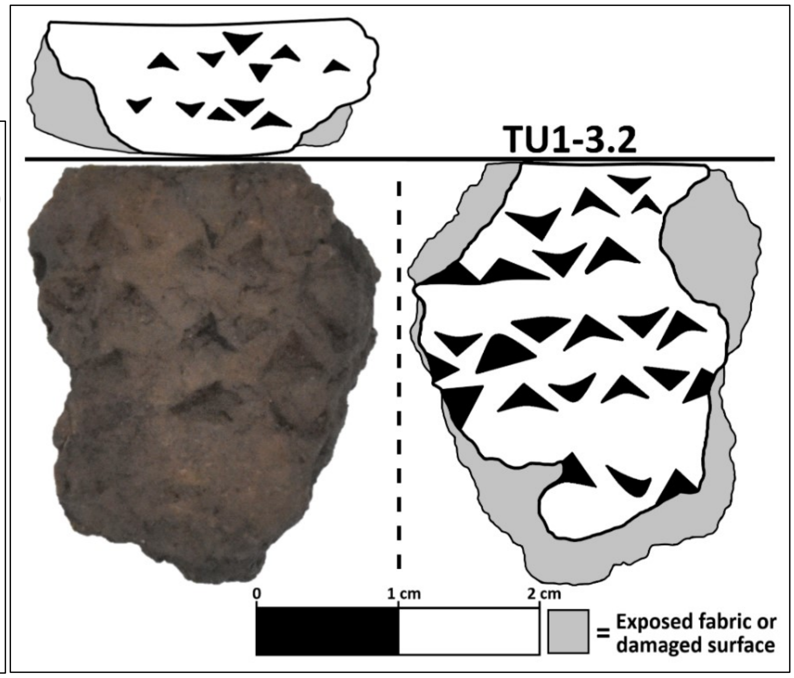


Figure 4.45: TU1-2.I.1, Yuan Longquan celadon rim.

No ceramic artefacts were recovered from the topsoil, TU1-1. TU1-2, Stratum A (Figure 3.35), which contained 25 ceramic artefacts (143.6 g), plus 3.6 g of daub, was the second least productive context of TU1 at 4% of both pottery count/weight. Local ceramics had quartz temper. A rim fragment, TU1-2.1, was red-slipped on multiple surfaces with either graphite or soot on its interior. This sherd belonged to a slightly inturned bowl. TU1-2.2, a body sherd, had alternating bands of triangular punctates (Figure 4.46) in the style of the Antetikala and Kingany phases (Wright, *et al.* 1996: 48).

Two fragments of Yuan Longquan celadon (Figure 4.45), 13th-14th century, similar to PP8.I.1 (Section 4.C.*II*.b.*i.1*), were recovered in TU1-2 (Hannah Parsons-Morgan *pers. comm.* 26 June 2019). These finds were positioned in a layer formed after the abandonment of the southern mosque (Stratum C), dictating the chronologies upper limit (Chapter 5).



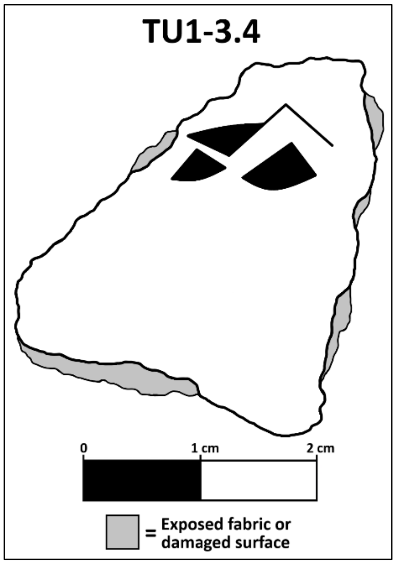


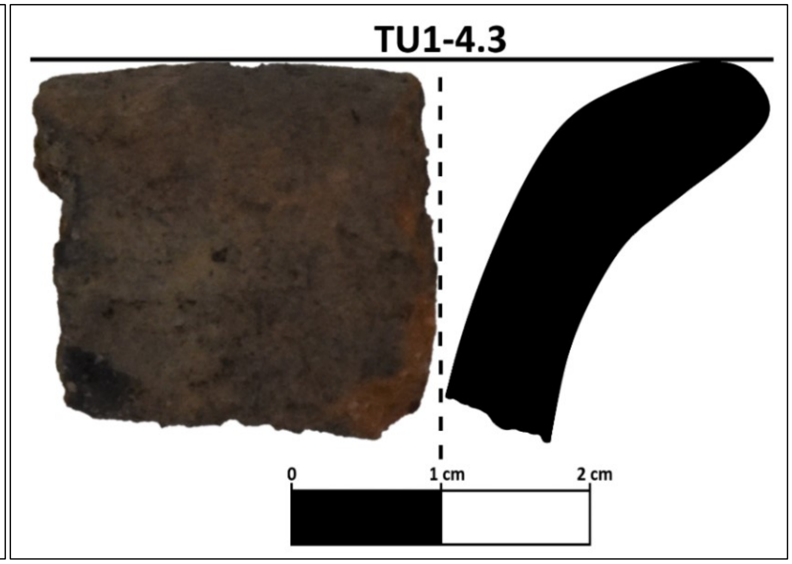
Figures 4.46 and 4.47: Left: TU1-2.2, decorated sherd**; Right:** TU1-3.2, decorated rim.

The ceramic assemblage of TU1-3, Strata B and C, had 59 local sherds (407.7 g), and 4.3 g of daub, approximately 10% of pottery by count in TU1 (12% weight). Fifty percent of the eight sherds analysed were coarse, and two were medium to high quality. Quartz granules (38%, 3), grog (25%, 2), and charcoal temper (13%, 1) were observed. Fifty percent (4) had partially reduced fabrics. All vessel types represented by the sherds were possibly for communal eating, those being one wide bowl and two large, shallow dishes (rim diameter greater than 30 cm).

Half of diagnostic sherds from TU1-3 were decorated with triangular punctates (Figures 4.46 and 4.47). A single brown burnished rim (interior) and a pierced sherd were also found. TU1-3.2 (Figure 4.47), a rim decorated with irregular, triangular punctates on three surfaces, is reminiscent of the 14th-16th century Kingany series

(Wright, *et al.* 1996: 51). TU1-3.4, decorated with a combination of incised lines and triangular punctates, also is from the Kingany phase (Figure 4.48) (Vérin 1975a: 320).





Figures 4.48 and 4.49: Right: TU1-3.5, decorated sherd**; Left:** TU1-4.3, jar rim.

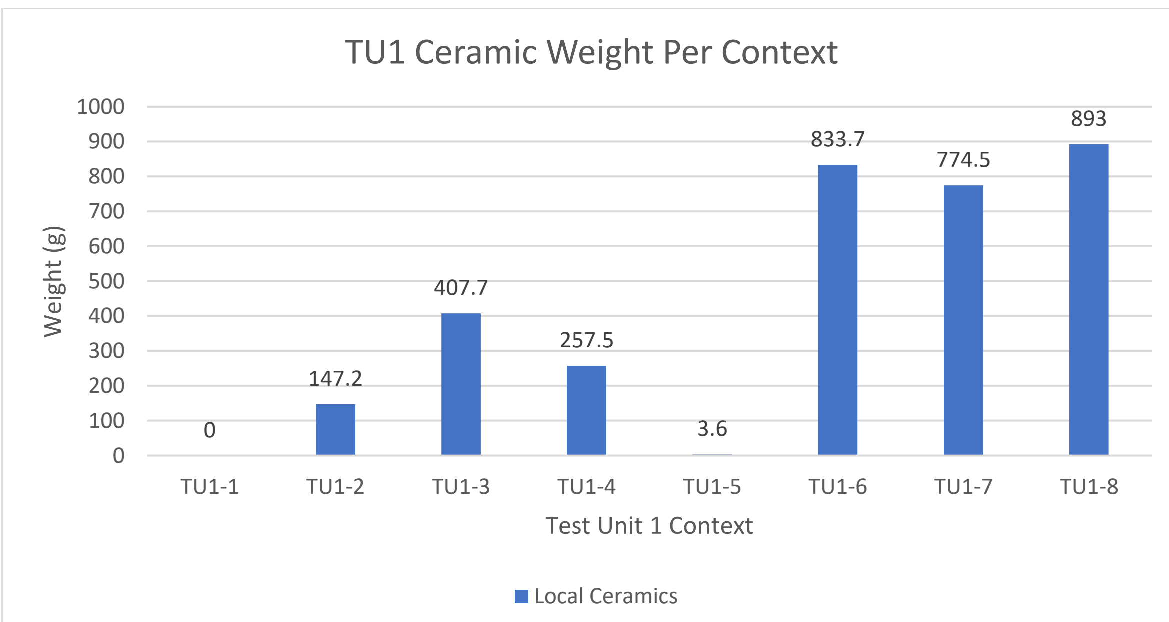
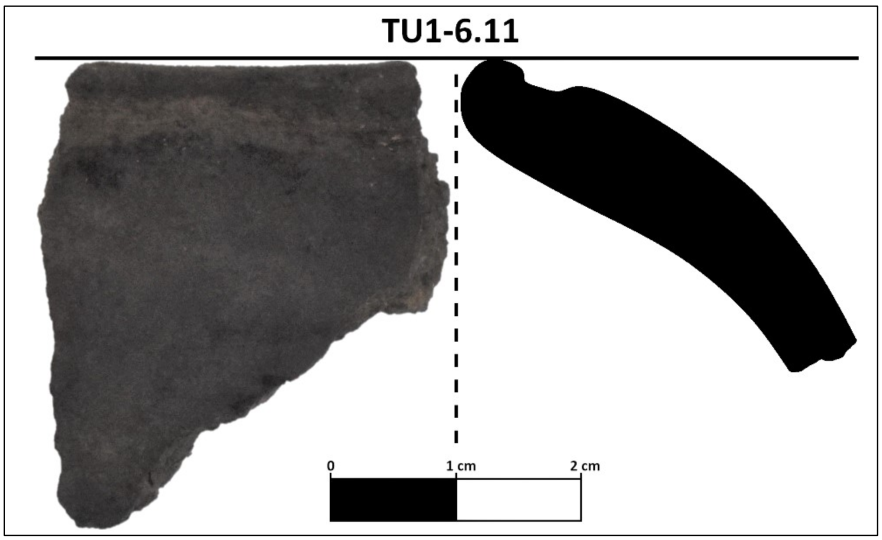
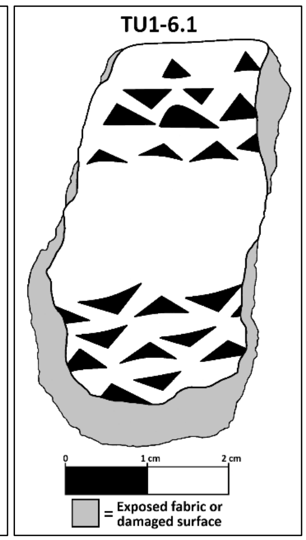


Figure 4.50: Ceramic weight by context, TU1.

About 8%, count/weight, of TU1 pottery (51 or 256.4 g, and 1.1 g of daub), came from TU1-4, Strata C and D (Figure 3.35). Sixty-six percent (4) of the analysed assemblage was medium quality, based on their fabric, the rest were coarse (2). All but one sherd had reduced fabric (83%, 5). Quartz granules (33%, 2) and crushed ceramic temper (33%, 2) were observed. A single sherd had both. The analysed assemblage of TU1-4 contained a necked jar (TU1-4.3) and two bowls, closed and open (Figure 4.49). The only decorated sherds in TU1-4 were three burnished samples (brown) and one red-slipped rim. Samples from TU1-4 were entirely from the Antetikala phase. TU1-4 contained no imported ceramics.

Three ceramic sherds (3.6 g), and no other artefacts, were collected from TU1-5, the unit's least artefact dense archaeological layer. These artefacts were likely shifted from their primary depositions by natural processes (Chapter 3.C.*II*.b).

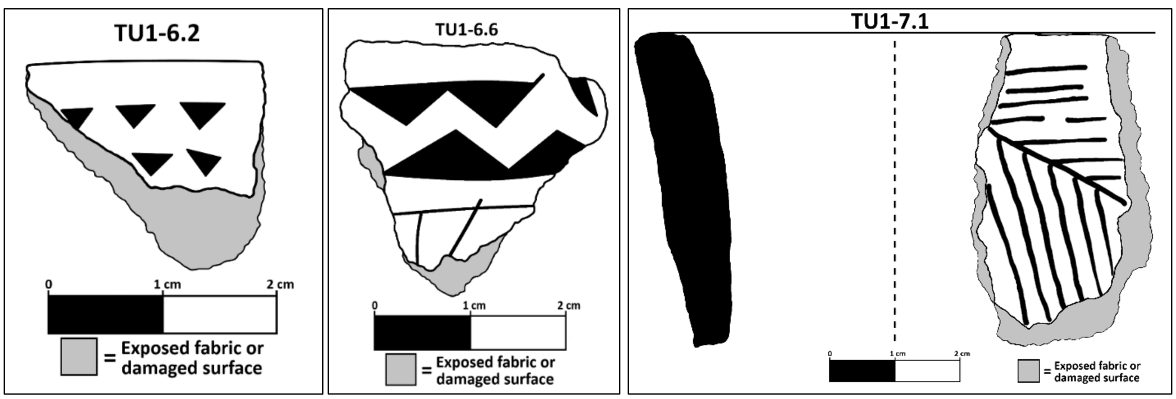




Figures 4.51 and 4.52: Left: TU1-6.11, rim from closed bowl**; Right:** TU1-6.1, decorated rim.

TU1-6, corresponded with the basal mosque layer (Figure 3.35), Stratum D, and contained approximately as many sherds as all preceding contexts, at 209 sherds (810.7 g) (35% of total, 25% weight) plus 23 g of daub (Figure 4.50). Analysed specimens (26) were generally low to medium quality (69%, 18). Approximately 92% (24) of samples were reduced and 8% (2) were oxidised. Quartz (31%, 8) and grog (15%, 4) tempers were observed.

Six forms were present in TU1-6, a carinated and closed bowl (Figure 4.51), a cup, a shallow dish, a necked jar, and a tripod vessel foot (similar to Figure 4.71). These sherds, except for the shallow dish and potentially the tripod pot, were from vessels best suited for individual usage. Few sherds (4 or 15%) were decorated. Triangular punctates (TU1-6.1, TU1-6.2, and TU1-6.6), and incised parallel lines (TU1-6.12) were noted (Figures 4.52 and 4.54). The banded, irregular, triangular impressions of TU1-6.1, the combination wavy design and incised lines of TU1-6.6, and the parallel incised TU1-6.12, have analogues within the Antetikala and Kingany series (Vérin 1975$_{a}$: 320; Wright, *et al.* 1996: 48). The use of simple triangular punctates uniformly pointing away from the rim on TU1-6.2 (Figure 4.53) matched examples from Mahilaka Occupation unit *Ia* and the Antetikala phase (Radimilahy 1998: 151; Wright, *et al.* 1996: 48). Red-slipped sherds were collected, five with multiple surfaces coated, one on the exterior, another on the interior. Six sherds were burnished, two black, one dark brown, two brown, and one red. Two samples had both burnished and slipped surfaces. One of two red pigment samples from Site II came from TU1-6. The ochre chunk (1 g), likely used to decorate ceramics, produced an earthy red smear when touched to paper. TU1-6 contained no imported ceramics.



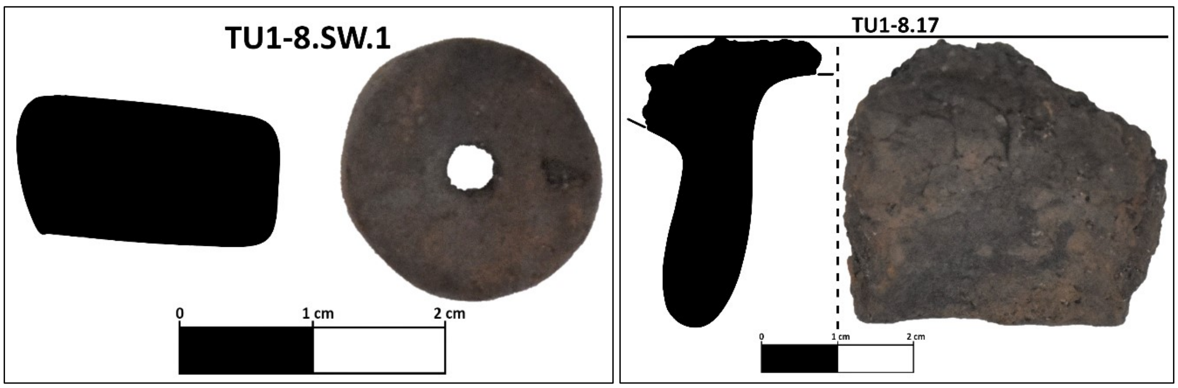
Figures 4.53, 4.54, and 4.55: Left: TU1-6.2, decorated rim**; Centre:** TU1-6.6, decorated sherd**; Right:** TU1-7.1, decorated rim.

TU1-7, Strata D-G, produced 774.5 g (129 sherds), approximately 22% of the TU1 ceramic assemblage (Figure 4.50). Of the 13 analysed samples, 10 were low to medium, and 1 was medium to fine quality. Seventy-nine percent (9) of the sherds had reduced fabric. Quartz granules (29%, 4) and charcoal inclusions (8%, 1) were observed. Over half of the specimens (7) had soot covered surfaces or partially burnt matrices. Thousands of burnt fish bones and shells came from charcoal rich soil in Stratum F, likely the remains of a hearth (Sections 4.C.*II*.c.*ii* and 4.C.*II*.c.*iv*).

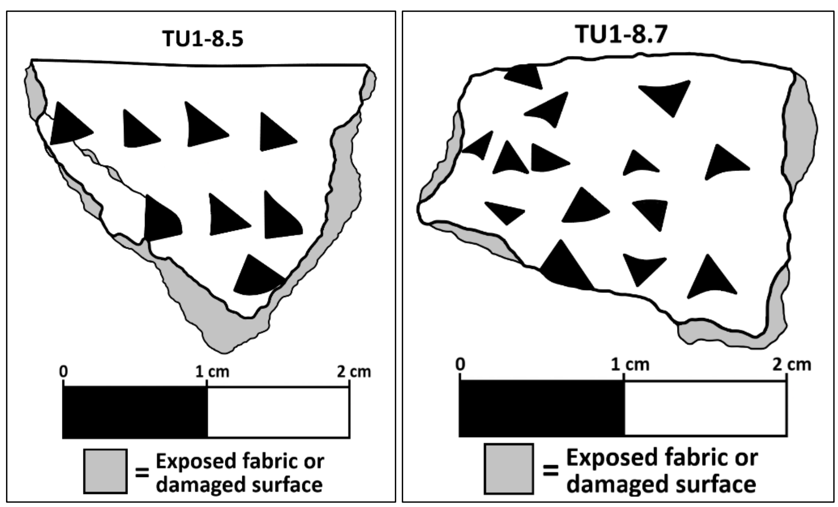
Bowls dominated the vessel categories identified with carninated (2), closed (1), open (2), and wide (2) variants identified. Necked jars (3) were also found. The only patterned sherd (TU1-7.1) belonged to a jar (Figure 4.55). Herringbone incisions under the rim of TU1-7.1 were unlike any Antetikala or Kingany ceramics visualised in Vérin's typologies (1975$_{a}$). Vaguely similar motifs appear in Mahilaka Occupation unit *IIb*, *circa* 13th-14th centuries, and Antsoheribory series typologies, 16th-18th

centuries, though neither perfectly match the pattern or vessel shape (Radimilahy 1998: 171; Vérin 1975$_{a}$: 419). A charcoal sample for C^{14} AMS dating placed the stratum at 1217-1286 (Section 3.C.*II*.b), indicating Vérin's Kingany series has both a longer chronological range and larger decorative repertoire than previously known (cf. Wright, *et al.* 1996: 48).

Brown (3) and red (1) burnishes were present in the TU1-7 assemblage. All burnish was confined to the exterior surfaces of sherds. Slipped sherds were all red, with multiple (3), including rim, and interior (1) surfaces coated.



Figures 4.56 and 4.57: Left: TU1-8.SW.1, ceramic spindle whorl**; Right:** TU1-8.17, ring-base fragment.



Figures 4.58 and 4.59: Left: TU1-8.5, decorated rim**; Right:** TU1-8.7, decorated sherd.

An Islamic "blue-speckled" ware fragment, TU1-7.I.1, was collected (Figure 5.18) (Timothy Insoll *pers. comm.* 12 November 2020). This style of vessel might have been an imitation of celadon plate, but produced in and traded from coastal Oman, potentially Qalhât, *circa* the 13th-16th centuries, correlating with the local ceramic assemblage and AMS date ranges (cf. Gianni, *et al.* 2020: 2-3).

TU1-8, Strata G and H, (Figure 3.35), was the most productive context of TU1 with 128 sherds (890.5 g), plus 2.5 g of daub, or 27% by weight (Figure 4.50). Eighteen diagnostic sherds and an undecorated spindle whorl (Figure 4.56) were analysed. The sherds were primarily low to medium quality (72%, 13) and reduced (94%, 17). The dominant temper was quartz pebbles (39%, 7), then crushed ceramic (22%, 4), and finally charcoal (11%, 2).

Bowls, carinated (1), closed (1), open (2) and wide (2), constituted 67% of identified vessels. One necked jar, a shallow dish, and a ring-base vessel were also found (Figures 4.60). Two sherds were decorated, both with triangular impressions (TU1-8.5 and TU1-8.7). The pattern on TU1-8.5 was nearly identical to TU1-6.2 (Figures 4.53 and 4.58) and finds in Mahilaka Occupation unit *Ia*, 10th-12th centuries, and the Antetikala typology (Radimilahy 1998: 151; Wright, *et al.* 1996: 48). The motif on TU1-8.7 was less uniform, with varying triangular shapes and sizes pointing randomly, but belonged to the Antetikala series (Figure 4.59).

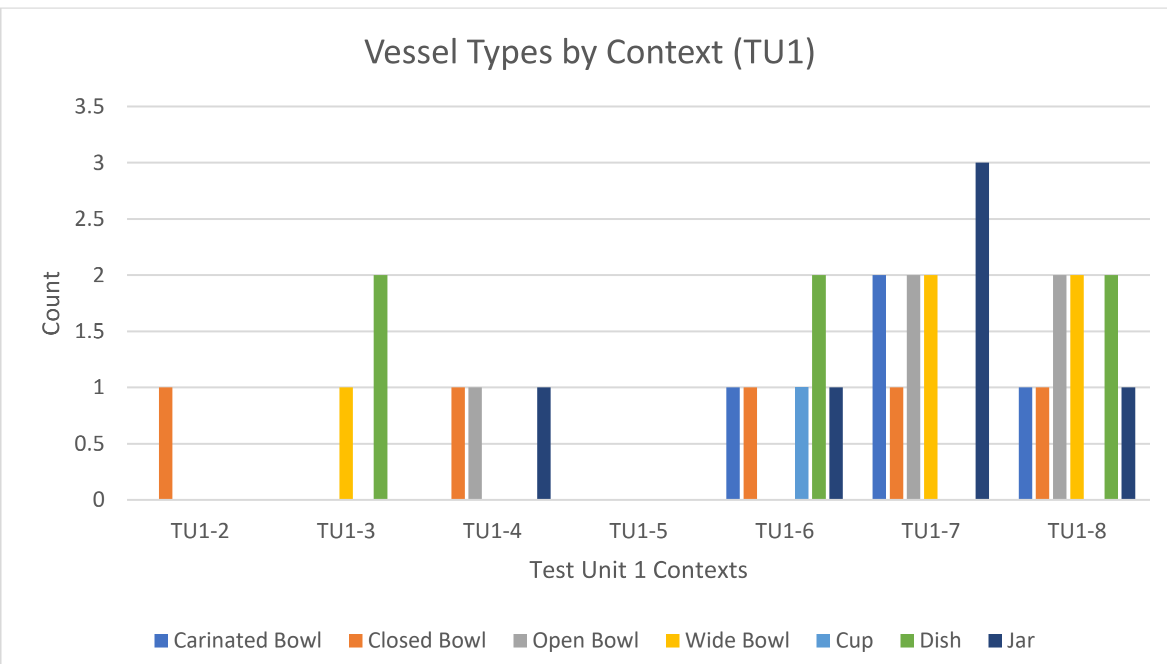


Figure 4.60: Comparison of vessel types in TU1 strata.

Seven (39%) brown burnished samples were identified, most with polishes confined to a single surface, two interior and three exterior. Four red-slipped sherds (22%), were evenly divided between multiple (2) and single coated surfaces (2).

Artefacts were not collected from TU1-9 due to wall collapses (Chapter 3.C.*II*.b).

Data from TU1 demonstrates that the basal period of Kingany was relatively productive (TU1-9 through TU1-6) in the vicinity, and prior to the construction, of the southern mosque (Figures 4.50 and 4.60). The late 13th century erection of the mosque shifted space utilisation from the general domestic evident in the early strata, to religious. This swing is apparent in the faunal and shell data (Sections 4.C.*II*.c.*ii* and 4.C.*II*.c.*iv*). Vessel categories present in older contexts were mixed with at least five general types in TU1-6 through TU1-8 (Figure 4.60). Bowls dominate the assemblage throughout, but jars were more prevalent in those earlier contexts confidently associated with the Antetikala phase.

4.C.*II*.c.*ii*. Fauna

Analysis was completed by Lucien Marie Aimé Rakotozafy and Luciana Harifitiavana Rakotozafy (Appendix III).

TU1 contained 1,188 bone fragments (61% of total) weighing exactly 314.2 g, roughly 30% of total faunal collection by weight. At least 16 species were identified. Approximately 52% of the collection was too small/indistinct to be confidently classified (Table 4.5). Table 4.6 shows that faunal remains were more abundant immediately above the terminal stratum of TU1 (J), peaking in species present and quantity in TU1-7, then tapering off in TU1-6, Stratum D. TU1-6 contained the remnants of mosque floor fill. All data recommends that the construction of the mosque drastically altered how this space was used, a transition visible in Figure 4.61.

Table 4.6 shows TU1-1, Stratum A, and TU1-9, Stratum I, were completely devoid of faunal materials. This is because no samples were collected from the topsoil (TU1-1), and a partial unit collapse prevented examination of TU1-9. However, fish and medium-sized mammal bones were observed within the uncontaminated fill of TU1-9. Given the trend visualised by Figure 4.61, it is probable that TU1-9 was comparable to TU1-8 in faunal density.

Class	Family	Species	Number of specimens	Weight (g) of specimens
MAMMALIA	Bovidae	*Bos*	9	13
	Indeterminate	Small mammal species (Tenrec size)	1	2
AVES	Phasianidae	*Gallus*	8	2
	Anatidae	*Anas platyrhynchos* (domesticated)	7	4
	Anatidae	*Anas hottentota* (wild)	1	1
	Indeterminate	Indeterminate	5	2
	Rallidae	Species (smaller than *P. porphyrio*)	13	7
	Indeterminate	Species. 1 undetermined	10	4
	Indeterminate	Species. 2 undetermined	1	1
REPTILIA	Testudinidae	*Aldabrachelys* sp.	23	62
	Testudinidae	Species of small tortoise	8	3
	Testudinidae	3 species of tortoise (% shell size)	34	52
FISH	Osteichthyes	Undetermined species	60	14
	Osteichthyes	Various species	500	82
	Osteichthyes	Indeterminate	7	2
	Indeterminate	Different species	500	63
	Indeterminate	Osteichthyes	1	0.2

Table 4.5: Species identified in TU1.

Evidence for animal processing and preparation in the TU1 assemblage is scarce. Shells from three species of tortoise, from context TU1-8, possessed calcined elements, the result of being burnt at high temperature in an open-air environment (Galeano and García-Lorenzo 2014: 1602). This thermal decomposition occurs when an animal carcass is placed directly onto a fire (Galeano and García-Lorenzo 2014: 1602). Calcined fish bones, from undetermined bony fish species, were identified in the same context. Cooking whole fish directly on a fire is a technique still used in Boeni Bay. Evidence for butchery practice was found on a

P. porphyrio (swamphen) distal humerus fragment which had intentional cut marks. These marks were consistent with those utilised to detach flesh from the wing.

	TU1								
Test Unit 1 (contexts)	**TU1-1**	**TU1-2**	**TU1-3**	**TU1-4**	**TU1-5**	**TU1-6**	**TU1-7**	**TU1-8**	**TU1-9**
Taxa									
Bovidae (Bovinae/Caprinae)	-	+	+	-	-	-	+	+	-
Small mammal	-	-	-	-	-	+	-	-	-
Phasianidae (*Gallus gallus*)	-	-	-	-	-	+	-	-	-
Anatidae (*Anas* sp.)	-	-	-	-	-	-	+	-	-
Rallidae (*Porphyrio porphyrio*)	-	-	-	-	-	-	-	+	-
Unknown bird species	-	-	-	-	-	-	+	-	-
Testudinidae	-	-	-	-	-	+	+	+	-
Fish	-	+	+	-	-	+	+	-	-

Table 4.6: Contextual distribution of species in TU1.

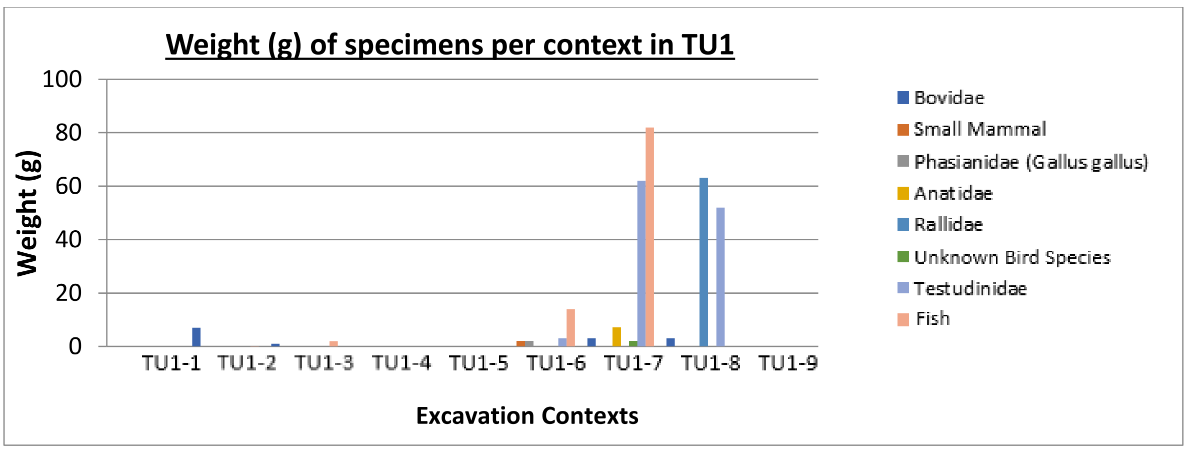


Figure 4.61: Visualisation of faunal specimen vertical distribution, TU1.

Contextualising the TU1 faunal data chronologically with the radiocarbon dates for TU1-9, 1176-1274, evidences a diversity of exploitation activities present from the earliest occupational phase of Site II. The exploitation of tenrec, present in TU1-6, is interesting because the species is not considered suitable for consumption by orthodox Islamic scholars (Seekersguidance.org 2020). The presence of processed and cooked tortoise is similarly unusual. Residue from domestic activities nearly disappears from TU1 following the construction of the southern mosque, visualised as the dearth of faunal materials on the left-hand side of Figure 4.61.

4.C.*II*.c.*iii*. Beads

Bead analysis was completed by Bako Rasoarifetra (Appendix I).

Size	1.2 – 2 mm	2 – 3.5 mm	3.5 – 5 mm	5 – 9.9 mm	Total
TU1	15	8	11	6	40

Table 4.7: TU1 bead sizes.

Eighty-five percent (34) of beads recovered from TU1 ranged between 1.2 mm (minute) and 5 mm (medium) in diameter (Table 4.7). Large beads comprised a greater proportion of the assemblage, 15% (6), than in the probing pits. While the sondage beads were produced exclusively from glass, three media, clay (4), coral/shell (2), and glass (34), were collected from TU1. That said, 85% of samples were glass. Beads were manufactured using both drawn and wound glass technologies. Despite the variability present, bead forms and frequency were congruent with those of the probing pits, i.e. annular (13%, 5), barrel (5%, 2), disc-circular (2%, 1), spherical (13%, 5), and spherical-flattened (67%, 27) (Table 4.9).

Material	Glass	Clay	Coral/Shell	Total
TU1	34	04	02	40

Table 4.8: TU1 bead material.

Glass beads at Kingany were presumably imports (Section 4.B.*II*.b.*iii*). However, clay and coral/shell beads could have been local products. Clay specimens were a reddish colour, similar to the locally produced pottery. These primarily spherical and oblate beads were consistent with samples from Mahilaka (Radimilahy 1998). No shell bead blanks were found during excavation, but the material is fragile. Therefore, their absence could be a consequence of preservation bias. Shell beads are found throughout the Mozambique Channel, e.g. Chibuene, Somaná, and Tungi as well as coastal Africa at large, and might evidence a mainland African presence at Kingany (Duarte 1993: 79; Wood, Dussubieux, and Robertshaw 2012: 61).

Shape	Annular	Spherical	Spherical-Flat	Disc-Circular	Barrel	Total
TU1	5	5	27	1	2	40

Table 4.9: TU1 bead shape.

Colour	Red	Brown	Blue	White	Green	Green	Yellow	Orange	Yellow	Total
Opacity	Opaque	Opaque	Transl.	Opaque	Transl.	Bottle	Transl.	Transl.	Opaque	
TU1	17	5	4	2	2	3	3	3	1	40

Table 4.10: TU1 bead colour.

Bead colours were more diverse in the TU1 assemblage than in the probing pits (Table 4.10). Translucent coloured and opaque red specimens were roughly equal, 30% (12) and 43% (17). Black, blue, red, and yellow beads were fundamentally the same as those discussed in Section 4.B.*II*.b.*iii*, and were akin to those found elsewhere in northern Madagascar. Brown opaque and white opaque specimens were closer in style to the Khami Indo-Pacific series from sites like Chibuene and Kilwa Kisiwani (Wood, Dussubieux, and Robertshaw 2012: 68). These types first entered coastal East Africa through Indian Ocean trade in the 15th century and were distributed primarily in the southeast of the continent (Wood, Dussubieux, and Robertshaw 2012: 68).

4.C.*II*.c.*iv*. Other Material

A single undecorated chlorite schist fragment (13.2 g) was found in TU1-7, vertically positioned beneath the southern mosque foundation, Stratum D, in close proximity to a 13th century green-glazed sherd (Section 4.C.*II*.c.*i*).

Dark-coloured (blue or green) vessel glass (0.2 g) was collected from TU1-8. The fragment was too small to determine its original shape.

While chlorite schist and vessel glass finds from TU1 were confined to sub-mosque strata, metal and mica artefacts were present throughout. A majority (82%) of the 28 metal artefacts (1.6 g) were located within TU1-2 through TU1-6. Metal objects were primarily iron prills (82% or 23 pellets), but slag (4) and an iron clipping (1) were also found. Aside from a solitary piece of slag in the foundation fill, the only ferrous waste above TU1-7 were two fragments in TU1-2. These finds evidence smithing activities following the abandonment of the mosque, as it is improbable that iron-working would have occurred within an active mosque. Ten mica pieces (0.3 g), over 33% of all mica collected in 2019, came from TU1-6 through TU1-8. Twenty-one metal artefacts were certainly deposited within foundation fill, TU1-3 through TU1-6, while other iron prills (4), mica (9), and slag (1) from TU1-7 through TU1-8 predated the mosque, and thus belonged to the suspected pre-Islamic or "Antetikala phase" assemblage.

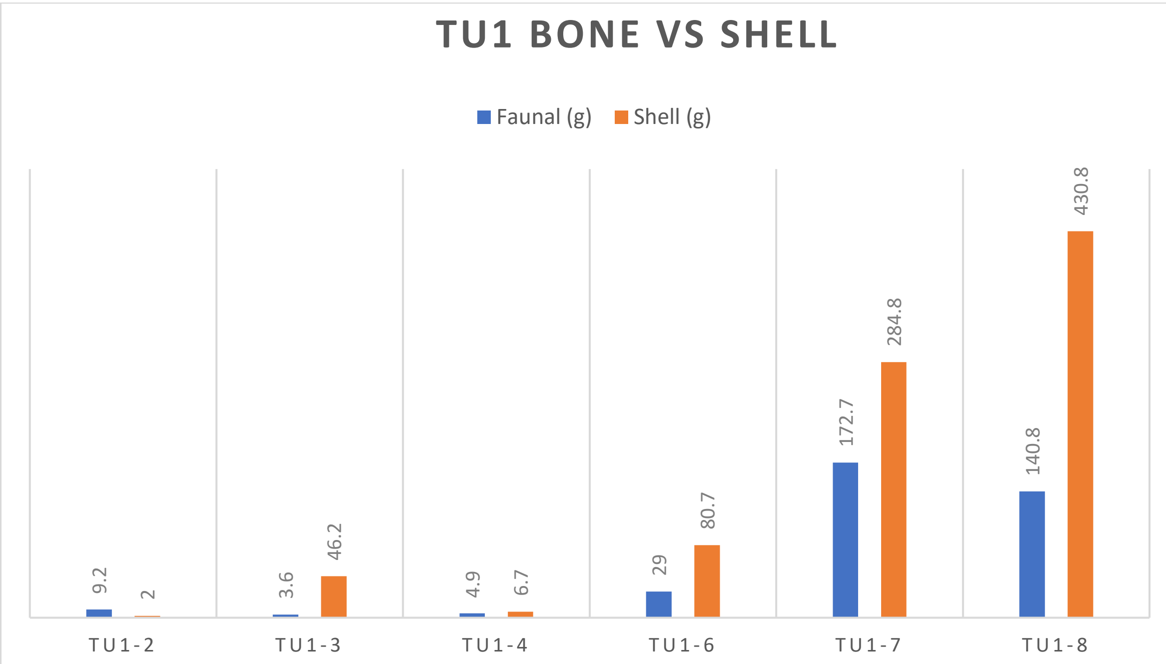


Figure 4.62: Comparison of bone and shell remains in TU1.

It is suspected that Boeni communities habitually exploited "estuarine resources" (Wright, *et al.* 1996: 50). Thousands of burnt fish bones came from the charcoal rich soil of Stratum F (Section 4.C.*II*.c.*ii*). Shell remains, while present in the upper contexts (8 samples, 54.9 g), were significantly greater (163 samples, 796.3 g) from Stratum E until the basal layer (Figure 4.62). No shell was collected from the topsoil layer, TU1-1. Five species, *Arcidae Andara antiquate*, *Oxymeris maculata*, *Neritidae*, *Pteriida*, and *Tridacna squamosa,* and 25 indeterminate fragments were identified in these strata. The weight of shell from the bottom half of TU1-7 (284.8 g) exceeds all preceding contexts combined. Thirty-eight shells from four edible species, some of which were burnt, were encountered amidst calcined bones, indicating that these species were being consumed. Marlinspike auger represented 73% of edible species identified in this context. *Tridacna squamosa*, fluted giant clam, which live in a habitat generally outside the intertidal zone, up to 20 m depth, provides evidence for forage diving in the 13th century (Montereybayaquarium.org 2020). Giant clams shells were used for aragonite bead production in the Kilwa Archipelago and were likely a valuable raw material (Wynne-Jones and Fleisher 2016: 129). TU1-8 had the second-most shell of any context/unit excavated with 85 (430.8 g) total samples, 78 shells (approximately 400 g) from 3 edible species, *Arcidae Andara antiquate*, *Oxymeris maculata*, and *Pteriida*. *Neritidae* and indeterminate samples were also recorded. Marlinspike auger was 64% (54) all shell in this context, approximately 69% of edible remains.

Figure 4.63: Sandstone slab, TU1.

In most cases, combined shell weight, specifically edible species, was at least 30% greater than that of bone finds in the same contexts (Figure 4.62). Material preservation bias must be considered when interpreting this data. Similarly, this weight disparity is partially due to shell generally possessing greater mass than similarly sized fish and bird bones. That said, these data indicates shellfish were not necessarily the product of opportunistic exploitation but were actively collected and processed for consumption. While Figure 4.62 appears to display a general reduction in shellfish consumption over time, the decline coincides with the construction of the southern mosque, and accompanying change in spatial use in the early to mid-13th century.

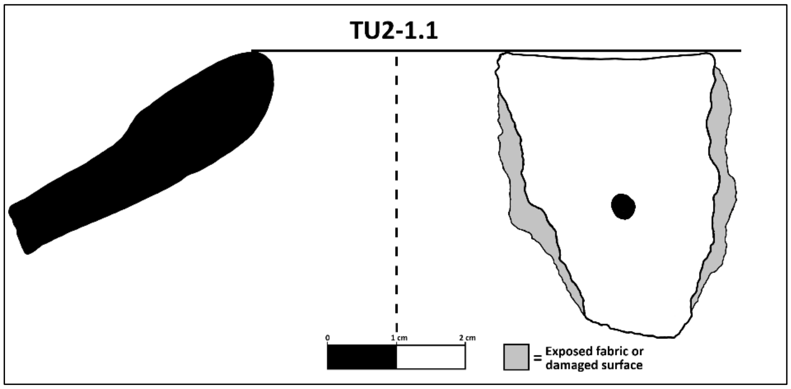
Four quartz pebbles (86.6 g) were collected from TU1, though copious fragments of degraded sandstone and disassociated coralline limestone rubble were also encountered. A sandstone slab (Figure 4.63) found near the base of Stratum D, appears to be an intentionally shaped flagstone, possibly from the southern mosque foundation. No human remains were found in association with the sandstone, so it is not believed to be a head/footstone.

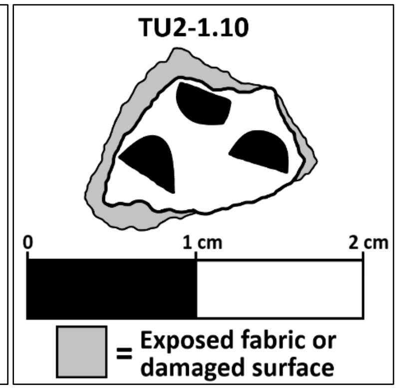
4.C.*II*.d. Test Unit 2 (TU2)

TU2, measuring 2 m^2, was positioned south of Building 28, north of Structure 29b (a well), in what was thought to be a major thoroughfare, as it likely led to the principal entrance to the mosque. Containing 6,782 ceramic sherds (21.96 kg), TU2 had more artefacts than any other unit excavated. Sixty percent of that assemblage, 57% by bulk weight, came from a single context, TU2-3. Contexts are discussed from youngest to oldest.

4.C.*II*.d.*i*. Ceramics

Nine hundred and nine grammes of ceramics and 10.9 g of daub, 4% of TU2 pottery by weight, or 452 sherds (7% of total), were recovered from TU2-1 (Figure 4.67). Evidence for bioturbation in TU2-1 made it unlikely that these objects were recovered from their primary depositional contexts. Seventeen diagnostic samples and 6 undecorated spindle whorls (26% of site total) were analysed. Fifty-four percent (9) of the sherds were poor to average quality, based on their fabric, with only a single fine example (TU2-1.1). Two specimens were reduced (12%) and one was oxidised. Quartz granules (24%, 4) and crushed ceramic (6%, 1) inclusions were observed. No jars were present in TU2-1, except for closed bowls/hole-mouth jars (Figure 4.64). Carinated (1), closed (4), and open bowls (4), and the remains of two shallow dishes were identified.





Figures 4.64 and 4.65: Left: TU2-1.1, pierced rim sherd**; Right:** TU2-1.10, decorated sherd.

Figure 4.66: TU2-1.I.1, Longquan celadon sherd.

Two decorated sherds were found. TU2-1.10 had crude, semi-circular, punctates (Figure 4.65), while TU2-1.13 was deeply incised immediately below and running parallel to its rim. A black burnished, pierced rim fragment from a closed bowl, TU2-1.1, was also collected (Figure 4.64). A single red-slipped sample was coated on multiple surfaces. Sherds from TU2-1 belonged to the Antetikala and Kingany phases (Vérin 1975$_{a}$: 319; Wright, *et al.* 1996: 46, 51).

A late Song, Longquan celadon lotus/ribbed bowl sherd was found in TU2-1 (Figure 4.66) (Hannah Parsons-Morgan *pers. comm.* 26 June 2019; Priestman 2011: 93). These trade ceramics were popular throughout East Africa from the 13th-15th centuries (Zhao 2015: 4).

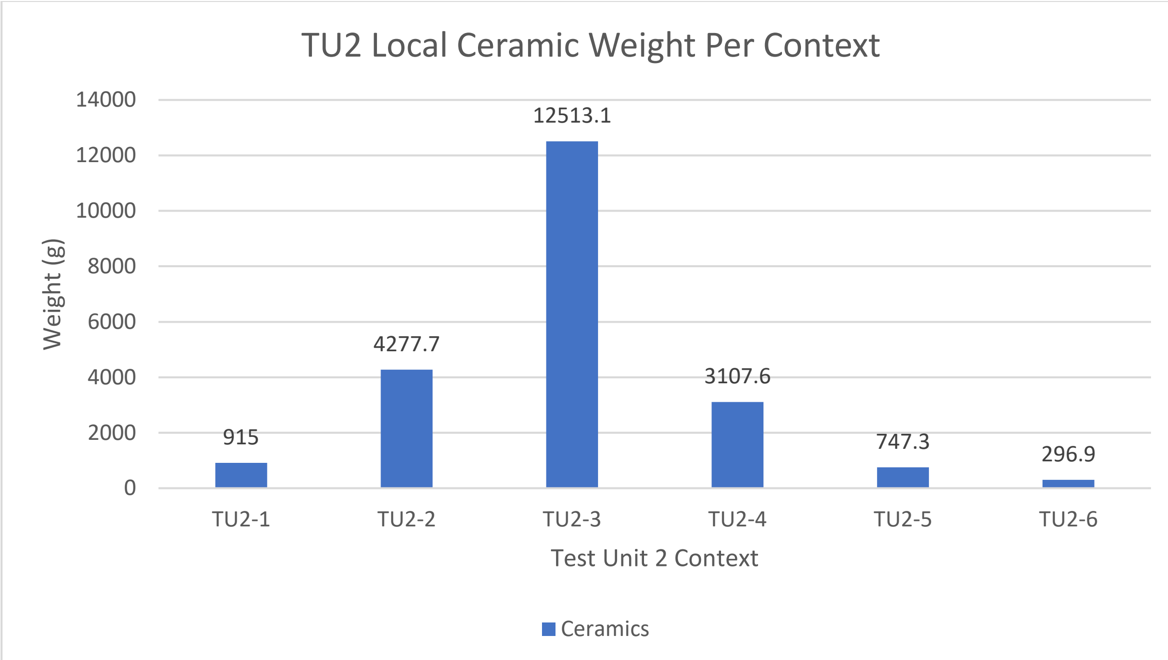
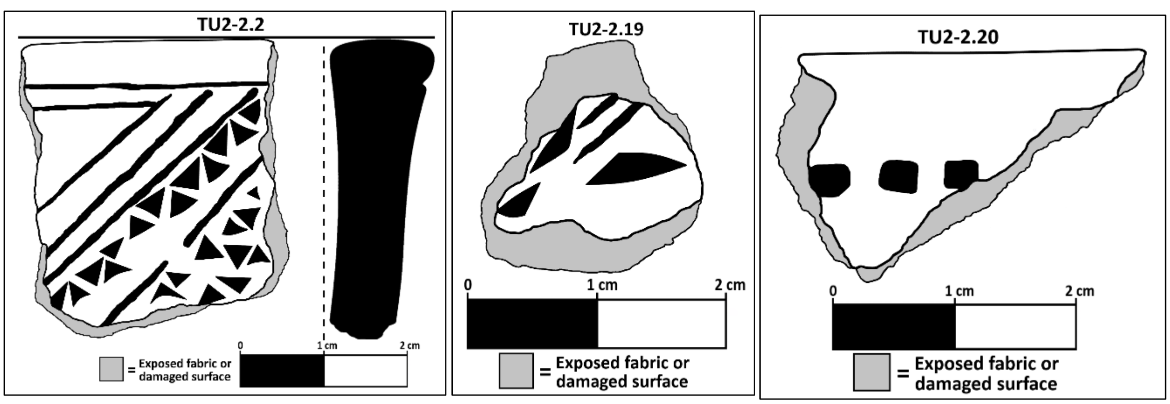


Figure 4.67: Ceramic weight by context in TU2.

TU2-2, Strata B and C, contained 1,319 ceramic artefacts (4,285.5 g) or approximately 20% of the unit pottery by count and weight. TU2-2 contained more daub (78.3 g) than any other context within TU2, but was low in comparison to 50% of the sondages (Sections 4.C.*II*.b.*i.1* - 4.C.*II*.b.*i.5*).



Figures 4.68, 4.69, and 4.70: Left: TU2-2.2, decorated rim**; Centre:** TU2-2.19, decorated sherd**; Right:** TU2-2.20, decorated rim.

Ninety-seven diagnostic samples and five undecorated spindle whorls (22% of site-wide count) were analysed. Eighty-eight (91%) samples were of low to average quality. Approximately 62% (60) of sherds were reduced, while 5 (5%) were oxidised. Quartz sands (34%, 33) and grog (28%, 27) were prevalent, with mica sheets (3%, 3) and shell (1%, 1) inclusions appearing more rarely.

Figures 4.71, 4.72, and 4.73: Top: TU2-2.3, ceramic vessel foot**; Centre:** TU2-2.30, roulette decorated sherd**; Bottom:** TU2-2.SW.1, decorated spindle whorl.

Bowls, closed (9) and small open variants (6), were plentiful (Figure 4.89). Jars (2), a pot ring-base, tripod feet (3) (Figure 4.71), and a shallow dish were also identified. These forms, especially the ring-base and tripod vessels, align with the Antetikala phase, though their decoration differs (Wright, *et al.* 1996: 46).

Twenty-four sherds possessed appliqué studs (1), incised lines (2), irregular (1), square (1), and triangular punctates (15), triangular impressions with incised lines (3), and possible rouletted patterning, 18 were burnished, and 17 slipped. Most motifs fit with the Antetikala/Kingany series, such as the combination of triangular punctates and incised lines on TU2-2.2 (Figures 4.68 and 4.69) (Wright, *et al.* 1996: 60). TU2-2.20 (Figure 4.70) is similar to material present throughout the Mahilaka occupational sequence, namely ceramics dating to the 10th-14th centuries (Radimilahy 1998; Vérin 1975a). TU2-2.30 (Figure 4.72) was potentially decorated with a roulette technology, again evidence for mainland African contacts, and similar to sherds discussed in section 4.B.*II*.b.*i*.*5*. Vérin did not encounter rouletted patterns during his excavations, therefore they are absent from Boeni Bay ceramic series. These sherds were only 3% of decorated finds, less than 1% of total pottery. A

Figures 4.74 and 4.75: Top: TU2-2.I.1 and TU2-2.I.2, conjoinable celadon rim sherds**; Bottom:** TU2-2.I.4, monochrome green-glazed rim.

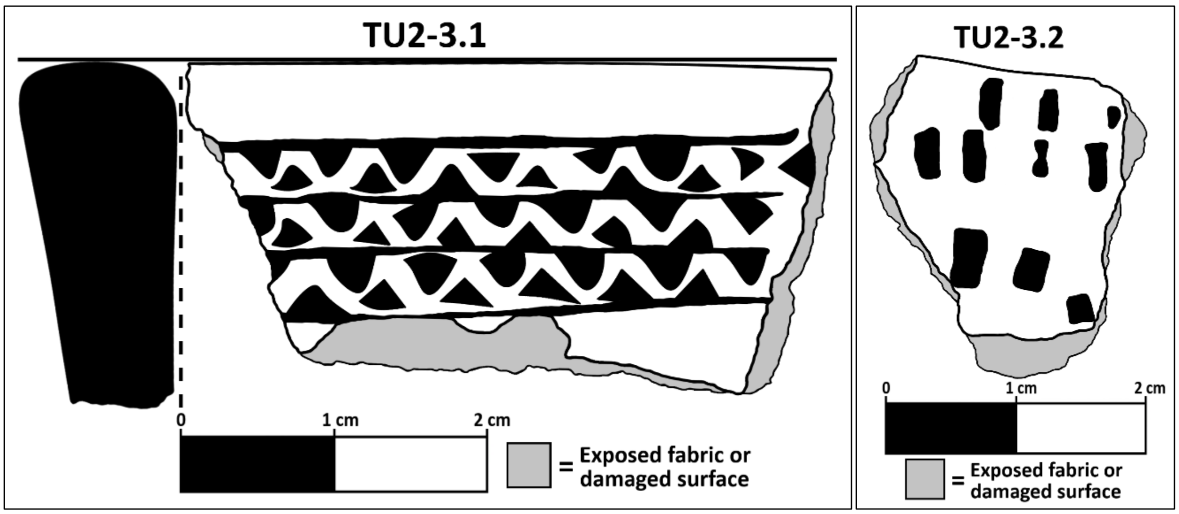
Kingany series, round punctated spindle whorl was also recorded (Figure 4.73) (Vérin 1975$_a$: 322).

TU2-2 was the most import-rich context at Kingany with 21% of total trade ceramic finds. Conjoinable sherds from the same large, late Song/Yuan (13th century) celadon bowl (Figure 4.74) were found adjacent to a small fragment of possible Guangdong grey stoneware, 13th to mid-14th centuries (Hannah Parsons-Morgan *pers. comm.* 26 June 2019). These East Asian ceramics corroborate the general timeframe, 13th-14th centuries, hypothesised for local ceramics in TU2-2. A sherd of the monochrome green-glazed style, produced in 11th-13th century southern Iran, was also recovered (Figure 4.75) (Hannah Parsons-Morgan *pers. comm.* 26 June 2019; Priestman 2011: 104).

TU2-3, Strata C and D, was comparable to the foundation fill of the southern mosque, TU1-6/7 or TU1 Stratum D, dated to the 13th century (Section 4.C.*II*.c.*iv*). TU2-3 was the most productive context of the entire 2019 expedition with 4,086 sherds (12.513 kg) of local pottery (Figure 4.67), or 60% of the unit's total ceramic assemblage numerically and by weight, and 45% of site-wide count (35% weight). TU2-3 contained the second-most daub by weight, 58.1 g, in the unit. One hundred and fifty-nine sherds and 2 undecorated spindle whorls were analysed. Approximately 85% (135) of samples had coarse to medium grains, and 2 sherds were average to high quality. Forty-one (26%) specimens were oxidised and 112 (70%) had reduced matrices.

Quartz granules (98%, 156) and grog (89%, 141) were common tempers, but shell (14%, 22), charcoal (4%, 6), and mica sheet (2%, 3) inclusions were present as well. Effectively all samples contained a combination of these within their matrices.

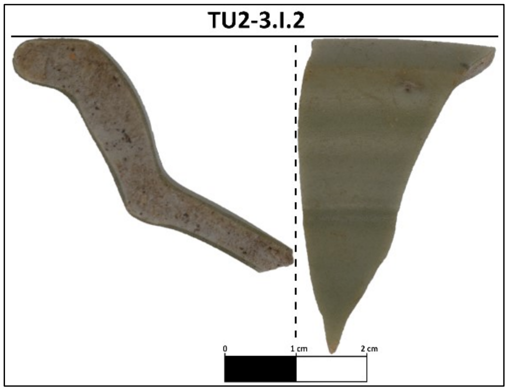
TU2-3 had the greatest vessel type variety of Site II, with 11 forms identified from 40 sherds (Figure 4.89). Bowls, carinated (5), closed (9), open (5), and wide (2), dominated the diagnostic assemblage. Jars were considerably rarer with only necked jars (6) and a beaker present. Other vessel types included four cups, three tripod feet, three shallow dishes, and one possible plate. A ceramic tuyère, similar to PP12.4 (Section 4.C.*II*.b.*i.4*), was identified. While this ceramic assemblage certainly postdates the construction of the southern mosque, the material perpetuates characteristics of non-Islamic phases, e.g. closed bowls and individualised serving dishes identified at other Malagasy sites such as Irodo, Lakaton'i Anja, and Sandrakatsy (Dewar and Wright 1993: 430, 437; Dewar, *et al.* 2013: 12585). Only 15% of identified vessels were suited for communal dining, shallow dishes, wide bowls, and plates (Pawlowicz 2013: 393). Therefore, no transition to communal eating is apparent, even following advanced phases of Islamisation, indicating the complexity of these processes.

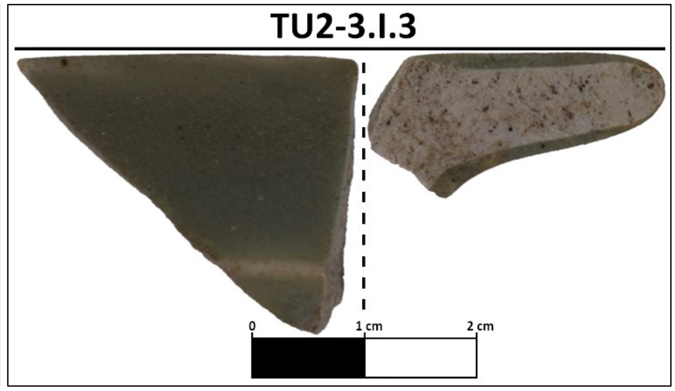


Figures 4.76 and 4.77: Left: TU2-3.1, decorated rim**; Right:** TU2-3.2, decorated rim.

Fifty-three sherds (33%) were decorated. Variations of punctates dominated, rectangular (3), simple (8), triangular (25), triangular with incised lines (2), but a number of impressed, arc (1), finger (2), simple (2), and incised, parallel (5), and triangular (2), specimens were also identified (Figures 4.76 and 4.77). Outliers included appliqué banded (TU2-3.146), combed (TU2-3.63), and tool marked (TU2-3.123) sherds. The rectangular punctates of TU2-3.2, TU2-3.52, and TU2-3.58, which were nearly identical to the "oblique dots" and "vertical angles" motifs from Mahilaka Occupation units *IIa-IIb*, also resemble the characteristic rectangular pattern of the Comorian Hanyundru series (Figure 4.77) (Radimilahy 1998: 158; Wright 2017b: 279). These sherds, however, were surely of local manufacture. Roughly 9% (40) of samples had burnished (52) and/or slipped (54) surfaces. Five shades of burnishes, black (17), brown (15), dark brown (13), light brown (1), and red (6), were noted. Slipped sherds had a similar colour spectrum, black (8), brown

(13), dark brown (1), and red (32). TU2-3 local ceramics undoubtedly belong to the Antetikala and Kingany typologies, 12th-16th centuries, with notable inspiration from 13th century Hanyundru and Mahilaka series (Wright, *et al.* 1996: 48; Vérin 1975a: 319).



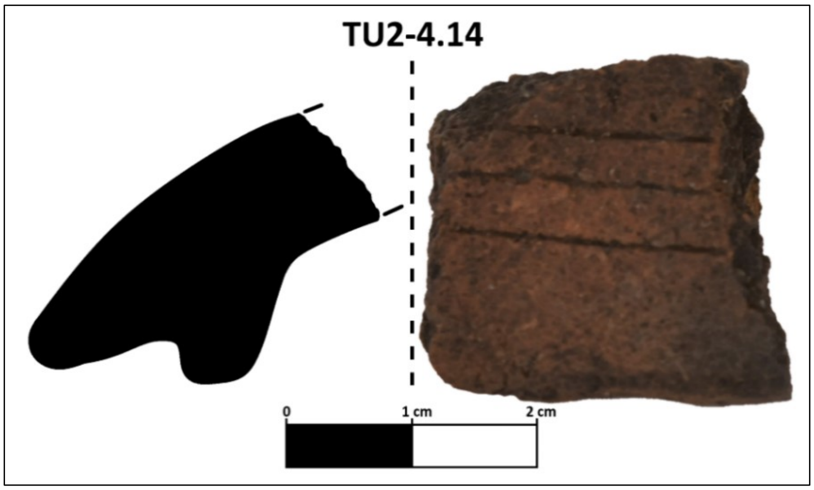


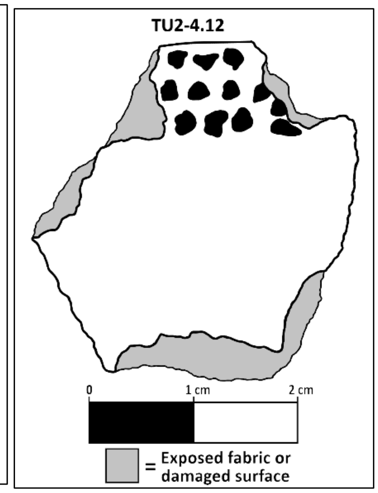
Figures 4.78 and 4.79: Left: TU2-3.I.2, Longquan celadon rim**; Right:** TU2-3.I.3, Guangdong celadon rim.

Interestingly, despite having the largest artefact assemblage, TU2-3 only possessed 16% of Site II imported ceramics. These were two Yuan Longquan celadon sherds, from a large, deep dish, 13th century (Figure 4.78), and a piece of Group 2 Guangdong celadon, 14th century (Figure 4.79) (Hannah Parsons-Morgan *pers. comm.* 26 June 2019; Priestman 2013: 659). These imports corroborate the local ceramic chronology and confirm stratigraphic connections with TU1.

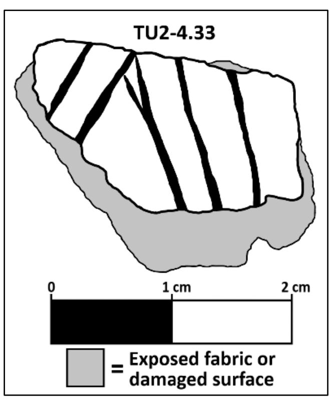
TU2-4 (702 sherds) contained 25% of the ceramic assemblage of TU2-3 by weight (3,072.1 g, plus 40 g of daub) (Figure 4.67). This disparity is not due to context size as TU2-4 is 70% (approximately 1.6 m^3) of TU2-3 (approximately 2.28 m^3) by volume. Data shows a dramatic period of growth occurred between TU2-4 and TU2-3.

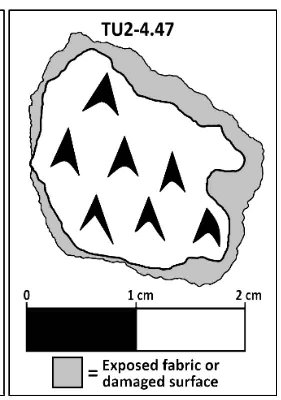
Fifty-five ceramic sherds, 78% (43) coarse to medium grained, and one undecorated spindle whorl were analysed. Like the preceding strata, most analysed sherds (47 or 85%) exhibited evidence of localised reduction, with fewer (4) oxidised samples. Grog (35%, 19) was more common in the TU2-4 than quartz pebbles (16%, 9). Crushed ceramic tempers are characteristic of the Antetikala phase (Wright, *et al.* 1996: 46). Pottery forms from TU2-4 are consistent with those of TU2-3. Bowls, carinated (3), closed (5), open (3), and wide (4), constituted 71% of identified vessel types (Figure 4.89). A single jar fragment was found. Other forms present included a cup, a lid fragment (Figure 4.89), a tripod vessel foot, and two shallow dish pieces. While some sherds were from vessels that would facilitate communal eating, i.e. the shallow dishes and wide bowls, the assemblage from TU2-4 appears to have been designed for individualised consumption. The implications of this are discussed in Chapter 5.

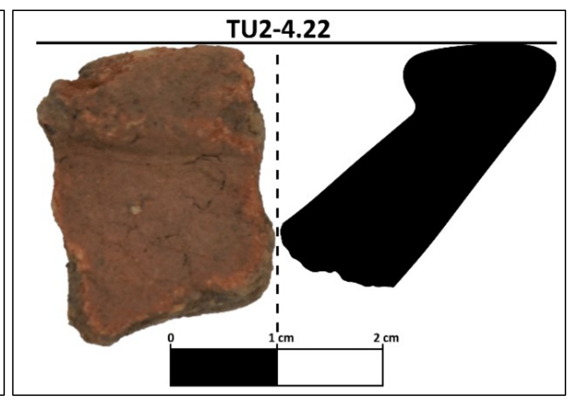




Figures 4.80 and 4.81: Left: TU2-4.14, decorated lid**; Right:** TU2-4.12, decorated rim.







Figures 4.82, 4.83, and 4.84: Left: TU2-4.33, decorated sherd**; Centre:** TU2-4.47, decorated sherd**; Right:** TU2-4.22, thickened rim.

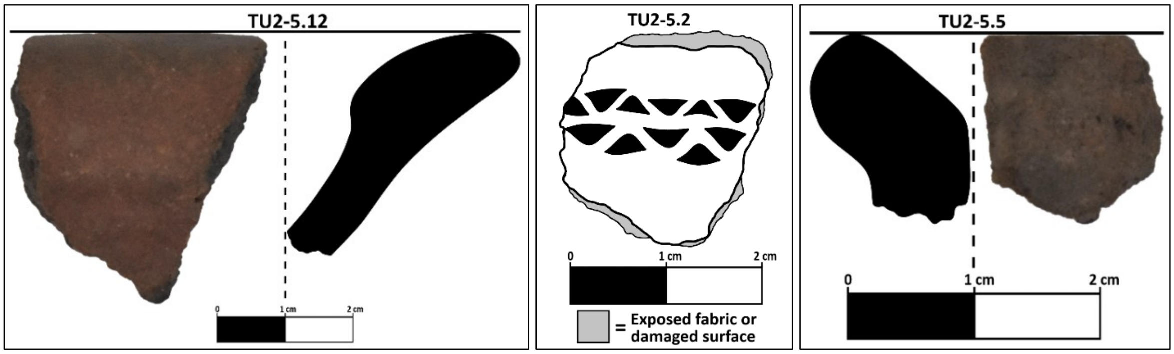
Six specimens (approximately 11%) were decorated. Four samples had punctates, triangular (3) and simple (1) (Figures 4.81 and 4.83). The chevron shaped punctates of TU2-4.47 were likely produced using a fish vertebra (Figure 4.83). Parallel (Figure 4.80) and triangular incised examples (Figure 4.82), were identified as well. Burnished finishes included black (7), brown (5), dark brown (2), and red (3) examples. Slip colours were black (2), brown (3), dark brown (2), and red (6). TU2-4 also contained an ochre chunk (1.2 g) which was an earthy red colour, similar to the piece from TU1-6 (Section 4.C.*II*.c.*i*). All patterns in TU2-4 have analogues within Mahilaka Occupation units *Ia*-*Ib*, and the Antetikala and Kingany series (Radimilahy 1998: 156; Wright, *et al.* 1996: 48; Vérin 1975$_{a}$: 316-317). However, morphological and compositional data, such as thickened rims (Figure 4.84), place the assemblage in the Antetikala phase, *circa* the 12th century, or earlier (Wright, *et al.* 1996: 48).

Figure 4.85: TU2-4.I.1, white ware sherd.

Imported finds in TU2-4 were limited, but varied. A 9th-12th century Chinese White Ware fragment (Figure 4.85) was found (Hannah Parsons-Morgan *pers. comm.* 26 June 2019). Similar *Qingbai* wares were transported from China across the Indian Ocean, reaching coastal East Africa by at least the 11th century (Zhao 2015: 8). TU2-4.I.2, a fragment of green-glazed monochrome, dated to the 11^{th-}13th centuries (Priestman 2013: 288).

TU2-5, Strata D, F, and G contained approximately 2% of ceramic artefacts from TU2 by count and 4% by weight (140 or 811.8 g, plus 5.8 g of daub). Thirteen samples were analysed, 62% (8) of which possessed coarse to medium-grained fabrics. A single fine-grained example (TU2-5.11) was recorded. Ninety-two percent (12) of the samples had reduced fabrics. Quartz pebbles (3) and crushed ceramics (2) were the only inclusions observed.

Closed (2) and wide bowls (1), and a tripod and shallow dish were identified in TU2-5 (Figure 4.89). Despite similar examples observed throughout the Site II assemblage, TU2-5.12, an out-turned, thickened rim does not fit any of the Boeni Bay ceramic typologies presented by Vérin 1975$_{a}$ or Wright, *et al.* 1996. However, the provenance of TU2-5.12 suggests an Antetikala series association. Sharing vessels in TU2-5 make up 40% of identified forms, compared to TU2-4 (29%), TU2-3 (15%), and TU2-2 (5%) (Figure 4.89). A gradual transition away from communal dining practice seems to manifest, the inverse of what was predicted based on mainland East African models (Pawlowicz 2013). This data is fully contextualised and explored in Section 5.B.*I*.c.*ii*.2.



Figures 4.86, 4.87, and 4.88: Left: TU2-2.12, thickened rim**; Centre:** TU2-5.2, decorated sherd**; Right:** TU2-5.5, roulette decorated rim.

Three decorated sherds, triangular impressed (Figure 4.87), possible rouletted (Figure 4.88), and wavy incised, were found. The rectangular rouletted rim of TU2-5.5 was unfortunately too faint to capture in a photograph (Figure 4.88). Four brown burnished and three red-slipped sherds were recorded. In most instances, the interior surface of the sherd was slipped or burnished, but exterior (2) and multiple surface (2) treatments were also present.

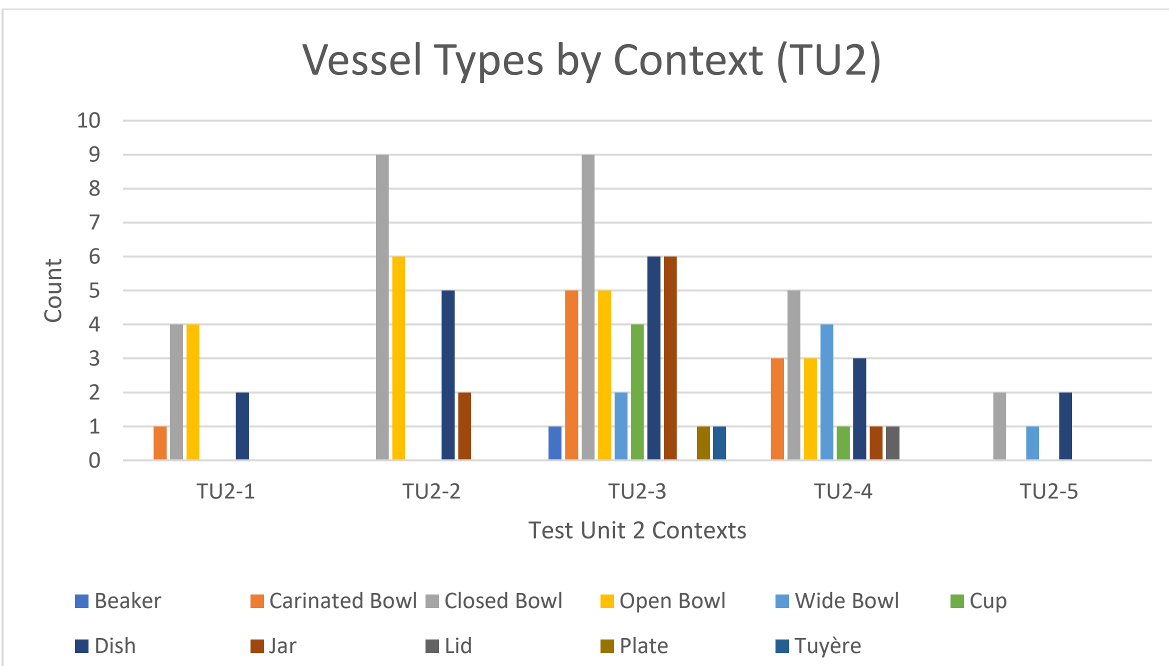
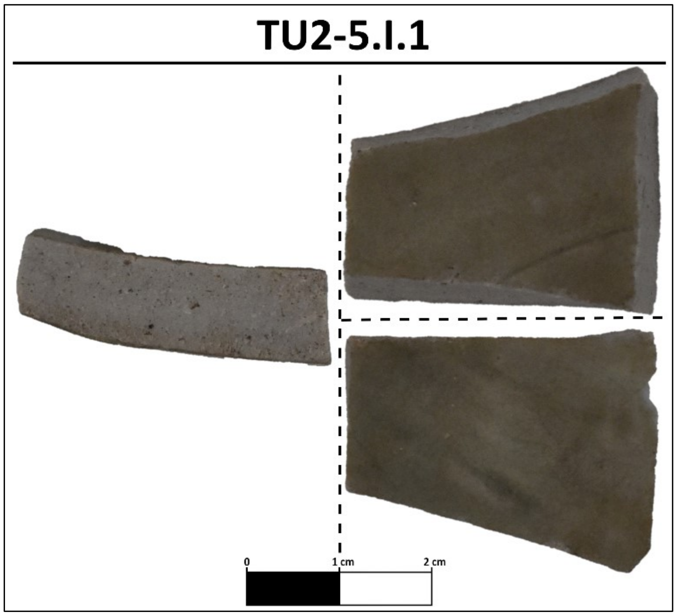
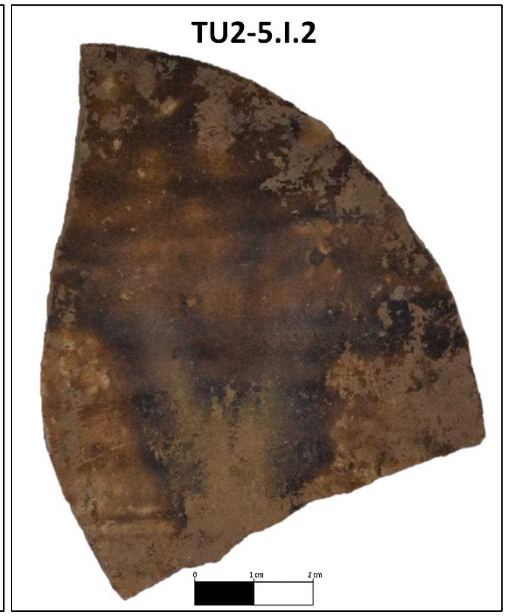


Figure 4.89: Comparison of vessel types in TU2 strata.

TU2-5 contained 11% (2) of Site II imported ceramic finds. These included a Yuan Longquan celadon sherd (Figure 4.90), 13th-15th centuries, and a 13th century Martaban stoneware, storage vessel fragment (Figure 4.91) (Hannah Parsons-Morgan *pers. comm.* 26 June 2019; Zhao 2015: 4). Martaban jars were produced in

Southeast Asia, and Myanmar, from at least the 11th century (Gutman 2011: 108). These vessels were traded widely for more than 600 years, appearing in East Africa in the 13th century (Gutman 2011; Hannah Parsons-Morgan *pers. comm.* 26 June 2019). Imported and local ceramic typologies present in TU2-5 denote an Antetikala phase connection.





Figures 4.90 and 4.91: Left: TU2-5.I.1, Longquan celadon sherd**; Right:** TU2-5.I.2, Martaban stoneware sherd.

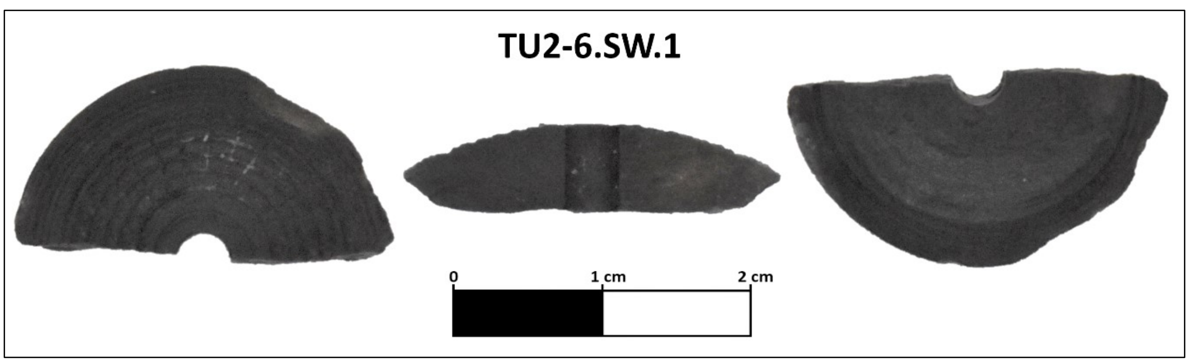


Figure 4.92: TU2-6.SW.1, decorated spindle whorl.

Only 1% of the TU2 ceramic collection by both count and weight (80 sherds and 295.9 g) were extracted from the 0.1424 m^3 of fill in TU2-6 (Figure 4.64). No daub or imported ceramics were found. Four diagnostic ceramics and one spindle whorl were analysed. Three of the analysed samples were medium-grained quality and half had partially reduced fabrics. Grog, shell, and quartz tempers were equally present. A lone decorated sherd (TU2-6.1) possessed banded triangular punctates.

No sherds were burnished or slipped. TU2-6.SW.1, the only spindle whorl from the context, was spectacularly patterned (Figure 4.92). Incised lines, linked by concentric circles, radiate from the centre of the blackened clay artefact. This specimen is the finest of its kind from Kingany, including all but one example collected by Vérin (1975_a: 322). Similar meticulously fashioned artefacts were found in Mahilaka Occupation unit *IIa*, approximately 13th century. This assemblage is from the Antetikala phase.

Artefact bulk weight trends for TU2 show that utilisation of the area increased steadily following its establishment, peaking after the erection of the southern mosque, TU2-2/TU2-3, and then declined sharply. A 1,700% increase in local ceramics between the 12th-13th century layer, TU2-5 or Strata G and F, and the proposed settlement peak, the 13th-14th century context, TU2-3 or Strata C and D, was recorded. This developmental phase occupied the bottom metre of archaeological fill in TU2. The settlement decline was marked by a return to foundational-level artefact density following a 1,350% drop in local ceramics between TU2-3 and TU2-1 (Figure 4.67). This contraction occurred in the top 40 cm of archaeological fill in TU2. Faunal and shellfish remains closely mirror these trends (Figure 4.99). The implications of this are discussed in Chapter 5.

Local ceramic vessel forms identified at Site II, 57% of which were from the TU2 assemblage, share characteristics with numerous East African coastal site groups, as defined in Pawlowicz 2013 (Figures 4.93 and Table 4.11). Open and wide bowls, cups, plates, shallow dishes, and tripod vessels, are identical to the mean of all sites (51% versus 50.4%) (Pawlowicz 2013: 390). Therefore, open vessels are not an ideal metric by which to compare the ceramic assemblage of Kingany. Globular vessels were absent from the Site II assemblage. However, the lack of globular vessels could be a result of collection and/or analytical bias as approximately three quarters of finds were less than 5 cm in diameter, complicating identification. Comparing statistics for in-turned bowls (closed bowls) and necked jars from Table 4.11 to those in Figure 4.93 reveals that the collection from Kingany falls within the range, and nearly matches the mean, for the sites listed as “Swahili”. Beaker and carinated bowl occurrences, however, more closely align with those of the Mikinidani and Lumbo groups, respectively (Figure 4.93 and Table 4.11).

	Number	Open bowl (%)	In-turned bowl (%)	Necked (%)	Globular (%)	Beaker (%)	Carinated (%)
Mikindani							
Imekuwa Mibuyu	44	45	0	39	14	2	0
Mgao North	107	48	1	49	2	0	0
Swahili							
Mombasa	1478	49	34	11	1	0	5
Chwaka	426	59	0	19	21	0	1
Shanga (Phase C)	2805	45	12	8	30	0	5
Lumbo							
Foz du Lurio	50	58	0	30	2	0	10
Somana	39	46	0	33	8	0	13
Mwamasapa							
Mwamasapa	157	47	0	10	37	6	0
Mwenepera	75	57	0	7	31	5	0

Figure 4.93: Local ceramic morphologies for coastal East African sites, Pawlowicz 2013: 390.

	Number	Open Bowl (%)	In-turned Bowl (%)	Necked (%)	Globular (%)	Beaker (%)	Carinated (%)
Kingany Site II	171	51	24	15	0	1	9

Table 4.11: Vessel forms. Based on Table 8 from Pawlowicz 2013: 390.

4.C.*II*.d.*ii*. Fauna

This section is based on the faunal report produced by Lucien Marie Aimé Rakotozafy and Luciana Harifitiavana Rakotozafy (Appendix III).

Sixty percent (653.5 g) of all faunal material from Site II, by weight, was recovered from TU2 (680 fragments). This percentage does not include shell. The assemblage contained at least 21 species from 5 classes, including an isolated human tooth (Table 4.12), the only human remains found. This tooth was likely lost during the individual's life and not from a formal burial as TU2 was immediately adjacent to a well. Bovines, present in TU2-2 – TU2-4 and TU2-6, fish, context TU2-2 – TU2-6, and tortoises, contexts TU2-2 – TU2-5, were most plentiful (Table 4.12

and Figure 4.94). This dataset is consistent with the sondage and TU1 artefact collections, but with greater diversity in taxa present. No bones were collected from the topsoil, TU2-1.

Class	Family	Species
MAMMALIA	Hominidae	*Homo sapiens*
	Bovidae (Bovinae)	*Bos* sp.
	Bovidae (Caprinae)	*Capra hircus*
	Bovidae (Caprinae)	*Ovis aries*
	Indeterminate	Indeterminate
AVES (Bird)	Anatidae	*Anas hottentota* (wild)
	Rallidae	*Porphyrio*
	Rallidae	Undetermined species (small compared to *P. porphyrio*)
	Unknown	Species. 1 undetermined (medium size)
	Unknown	Species. 2 undetermined (small)
	Unknown	Species. 3 undetermined (small)
REPTILIA	Testudinidae	*Aldabrachelys* sp.
	Testudinidae (terrestrial)	Species. 1 large tortoise
	Testudinidae (terrestrial)	Species. 2 medium-sized tortoises
	Testudinidae (terrestrial)	Species. 3 small tortoises
AMPHIBIA	Urodela	Undetermined species of salamander
FISH	Osteichthyes	Species 1 (small)
	Osteichthyes	Species 2 (medium size)
	Osteichthyes	Species 3 (undetermined)
	Osteichthyes	Species 4 (undetermined)
	Chondrichthyes	Species of Undetermined Skate

Table 4.12: Species identified in TU2.

Various Bovidae species were identified in TU2, namely domesticated goats (*Capra hircus*) and sheep (*Ovis aries*), a marked change from other units which contained exclusively cattle (*Bos*) remains. Goat bones, present in TU2-3, were more plentiful than cattle bones (37 to 18 elements, respectively) but were outweighed by *Bos* (53 g versus 110 g). Similarly, sheep remains, found only in TU2-4, outnumbered (34 to 20 elements) but did not outweigh (20 g versus 73 g) cattle remains from the same context. This incongruity could result from differing post-mortem processing practices for the animals. Interestingly, cattle, goats, and sheep are all present up to and through TU2-3, the pinnacle of the site, after which only *Bos* persists (Table 4.13 and Figure 4.94). Cattle, fish, and tortoises are all present throughout the entirety of the faunal assemblage, a testament to their dietary importance.

Evidence for animal processing in TU2 was limited. Calcinated remains of tortoise shells (TU2-3-TU2-5), cattle (TU2-4), fish (TU2-3 and TU2-4), goat (TU2-3), and sheep (TU2-4) were identified. Charred specimens, a number of tortoise shell fragments (TU2-4) and a goat talus (TU2-3), were also recorded. Evidence for butchery was found on three elements from TU2-3, a *Bos* long bone shard produced by a chop from a sharp blade and two goat vertebrae with cut marks. Unfortunately, complex butchery practice, like the implementation of *ḥalāl* methodologies, cannot be determined from such a limited dataset (cf. Gaastra and Insoll 2020).

Taxa	**Test Unit 2**					
	TU2-1	**TU2-2**	**TU2 3**	**TU2-4**	**TU2-5**	**TU2-6**
Hominidae	-	-	-	+	-	-
Bovidae	-	+	+	+	-	+
Anatidae	-	-	-	-	+	-
Rallidae	-	-	-	+	-	-
Unknown	-	-	+	-	-	-
Testudinidae	-	+	+	+	+	-
Amphibia	-	-	-	-	+	-
Fish	-	+	+	+	+	+

Table 4.13: Contextual distribution of species in TU2.

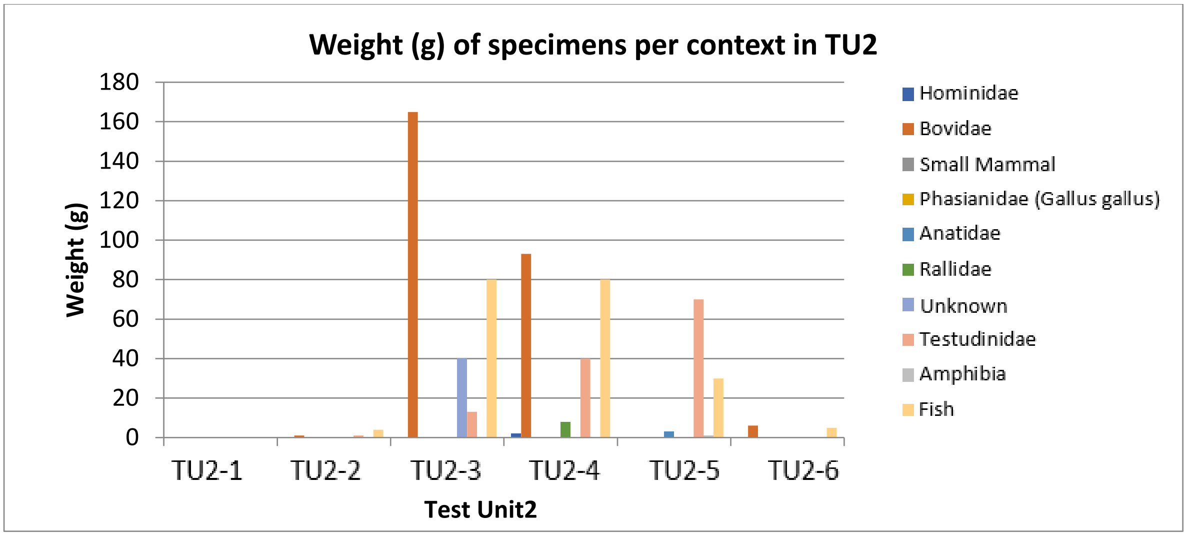


Figure 4.94: Visualisation of faunal specimen vertical distribution, TU2.

Figure 4.94 depicts the vertical distribution of the TU2 faunal remains, revealing an occupational trajectory. Gradual growth, beginning in TU2-6 and peaking in TU2-3, gave way to dramatic decline. From the establishment of Kingany a wide variety of animal species were exploited, some of which were *ḥarām*, namely tortoises. However, the complete absence of dog and pigs remains, species transported with and important to Austronesian peoples, a suspected population group at Kingany, is curious (Piper 2017: 253).

4.C.*II*.d.*iii*. Beads

The following data was provided by Bako Rasoarifetra's bead identification and analysis report (Appendix I). Bead sizes from TU2 closely match site-wide trends (Sections 4.C.*II*.b.*iii* and 4.C.*II*.c.*iii*) with 91% (58) of the 64 specimens within the minute to medium range (1.2 to 5 mm) (Table 4.14 and Figure 4.95). That said, samples collected during the 2019 campaign, primarily smaller beads (88% of specimens), might denote past local market demand (Figure 4.95).

Size	1.2 – 2 mm	2 – 3.5 mm	3.5 – 5 mm	5 – 9.9 mm	Total
TU2	17	29	12	6	64

Table 4.14: TU2 bead sizes.

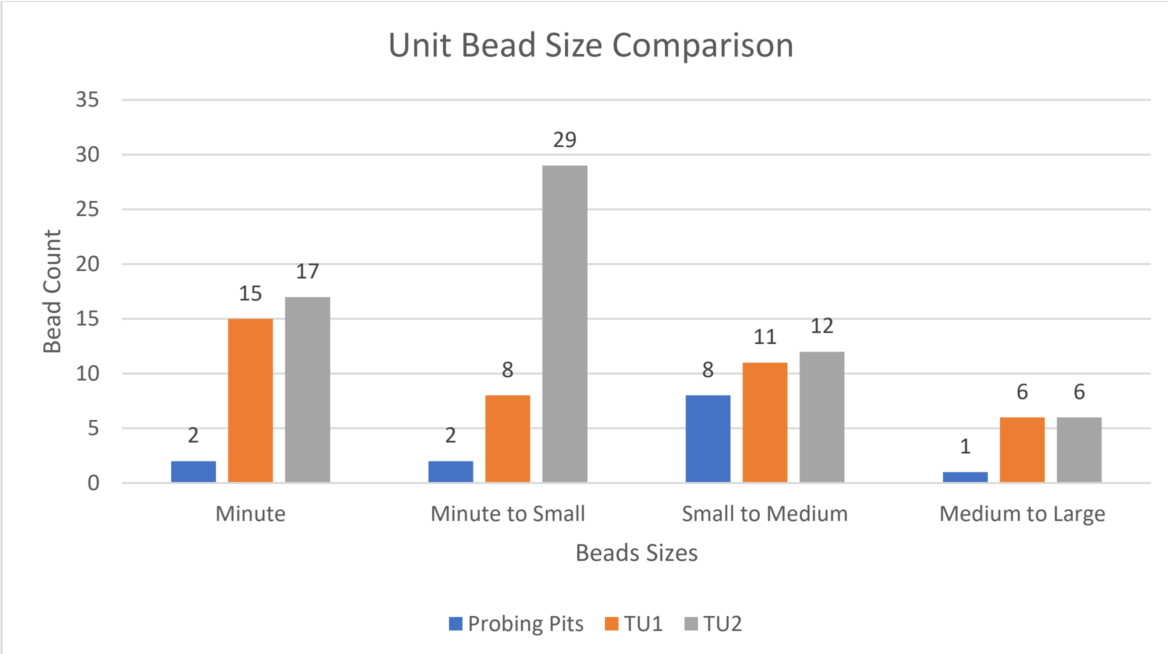


Figure 4.95: Bead sizes comparison.

Bead media from TU2 were similar to that from TU1 (Section 4.C.*II*.c.*iii*), with clay (2%, 1), coral/shell (6%, 4), and glass (92%, 59) artefacts found (Table 4.15). This mirrors site-wide ratios, clay (4%), coral/shell (5%), drawn (87%) and wound glass (4%). As there is no evidence for local glass production, it must be assumed that approximately 91% of the bead assemblage was imported (Vérin 1975b: 1028).

Material	Glass	Clay	Coral/Shell	Total
TU2	59	01	04	64

Table 4.15: TU2 bead material.

Shape	Annular	Spherical-Flat	Disc-Circular	Barrel	Tubular	Total
TU2	6	50	3	1	4	64

Table 4.16: TU2 bead shape.

Typological analysis of beads from TU2 places them in the "Indo-Pacific" category, with similarities to other Malagasy assemblages, e.g. Mahilaka, Sandrakatsy, and Vohémar (Sections 4.B.*II*.b.*iii* and 4.B.*II*.c.*iii*). Spherical-flat samples comprised 78% (5) of the collection. Annular (9%, 6), disc-circular (5%, 3), barrel (2%, 1), and tubular (6%, 4) beads were also found (Table 4.16). The only transparent bead from Site II (Table 4.17) was a colour and shape consistent with the Khami Indo-Pacific series, traded in East Africa between the 15th-17th centuries (Wood, Dussubieux, and Robertshaw 2012: 68). Curiously, despite chronological overlap between Kingany and Chibuene, there is no evidence of Chibuene, corded, or Zhizo Series beads at the former. This was unexpected, despite the 1,300 km distance between the two, because of Chibuene's suspected role as an early-second millennium trading hub in the Mozambique Channel (Sinclair, *et al.* 2012: 728). Site II beads do, however, share characteristics with early assemblages at Domoni and Sima, Nzwani, approximately 400 km north of Boeni Bay. Opaque, black, wound glass and red drawn beads were recovered from 9th-10th century strata at both sites, items likely originating from the Near East (Wright 1992: 105, 126). While there exists a chronological disparity between Kingany and the Nzwani sites (Sections 2.D.*II* and 4.C.*II*.c.*iv*), the Site II artefacts do have parallels with post-Dembeni Phase Comorian sites, such as Mazwini, M'Bachilé, and Mwali M'jini (Chanudet 1988; Wright 2017a: 273; 2017b: 282). It is unclear whether or not Kingany traded directly with the Comoros or through intermediaries, e.g. Mahilaka.

Colour	Red	Brown	Blue	White	Green	Yellow	Green	Yellow	White	Black	Blue	Total
Opacity	Opaque	Opaque	Transl.	Opaque	Transl.	Transl.	Bottle	Opaque	Transp.	Opaque	Transl.	
TU2	15	1	8	2	9	8	2	2	1	15	1	64

Table 4.17: TU2 bead colour.

4.C.*II*.d.*iv*. Other Material

TU2 contains chronologically mixed assemblages, with potential 11th century imports found in stratigraphically younger contexts than 13th century materials (Sections 3.C.*II*.c and 4.C.*II*.d.*i*). Therefore, these artefacts are in secondary or tertiary depositional contexts with vertical relationships dictated by disruptive events, such as the construction of the adjacent well.

Forty-seven percent of chlorite schist artefacts site-wide, 74% (283.6 g) by weight, came from TU2. Chlorite schist finds were constrained to the top metre of fill, potentially corresponding with the pinnacle of Kingany.

Figures 4.96 and 4.97: Top: TU2-2.C.1, chlorite schist foot**; Bottom:** TU2-4.C.1, chlorite schist foot fragment.

Three chlorite schist samples were thin sectioned and investigated by Nitsche, whose report supplied the following data (Appendix II). TU2-2.C.1, the largest chlorite schist artefact recovered and the only of its kind in Stratum B, was a trapezium-shaped leg (89.4 g) from the tripod base of a cylindrical vessel (Figure 4.96). Such containers were mass produced by the Rasikajy civilisation of the Vohémar region from at least the start of the second millennium (Schreurs, *et al.* 2011: 8-10). Optical mineralogical sourcing of TU2-2.C.1 indicates that it came from the Andilamena quarry, located 20 km west of Vohémar (Appendix II). The Analafiana Forest, in which the Andilamena and an ever-expanding number of other quarries were located, was an important extraction zone which supplied Vohémar (Appendix II).

Six chlorite schist artefacts, cumulatively weighing 87.1 g, were collected from TU2-3 or Stratum C. Two were plain sherds, TU2-3.C.1 and TU2-3.C.2, and two, TU2-3.C.5 and TU2-3.C.6, were decorated with lines in relief. A lid fragment, TU2-3.C.3, and a rim with graphite-coated interior, TU2-3.C.4, were also found. TU2-3.C.4, a flat cylindrical vessel rim, might have been reworked into a counter or gaming piece. The mineralogical make-up of TU2-3.C.6 made it “improbable that it [came] from… [Madagascar’s] east coast” (Appendix II). Nitsche suspects that TU2-3.C.6, despite having the quintessential Vohémar-Style motif, came from quarries in either the northern Mahavavy valley, near Ambohipato, or from “ultramafic units surrounding Toamasina”, neither of which contain known extraction zones (Appendix II).

Chlorite schist fragments from TU2-4 included the second largest schist find from Site II (86.5 g) (Figure 4.97). TU2-4.C.1, a tripod vessel leg fragment, was sourced to the Ambohimirahavavy quarry, east of Maromakotra, 40 km due north of the Toamasina quarry, located in the central northern region of the island (Appendix II).

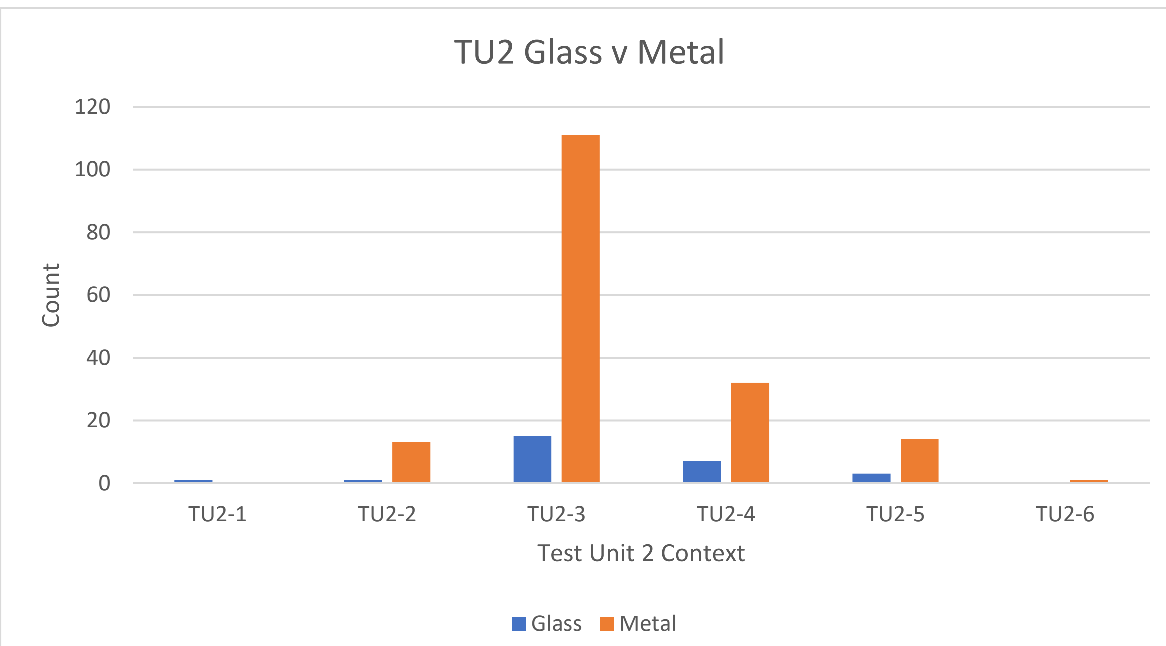


Figure 4.98: Comparison of glass and metal remains in TU2.

Seventy-seven percent of vessel glass and metal artefacts came from TU2. Glass, appearing in all of archaeological contexts in TU2 but one, included coloured (dark blue or green) and clear shards (27 pieces, 67% weight site-wide). Glass fragments were no more than 2 cm in diameter and less than 4 mm in thickness. Almost all pieces possessed an opaque patina or evidence of solar alteration. No decorated shards were found. The glass artefacts were likely the remains of flasks or similar small, thin-walled containers. Chemical analysis of the Kingany glass finds has not been conducted, but plant-ash shards of Middle Eastern origin have been recovered from contemporary Mozambique Channel sites such as Chibuene and Mahilaka (Henderson 2012: 116; Wood, Dussubieux, and Robertshaw 2012: 65).

Sixteen shards (2.3 g) of green, aqua, and clear glass were recovered from TU2-2 and TU2-3, accounting for over 40% of total glass finds at the site (Figure 4.98). Their ubiquity mirrors trends present in almost all other material categories, gradually increasing in density from the oldest contexts, TU2-5 and TU2-6, peaking in TU2-3 (56%) and then dwindling considerably (Figure 4.98).

Metal artefacts in TU2, while present throughout, were concentrated (92% of total, 98% weight) in the initial metre of fill (Figure 4.98). Metallic objects from TU2-2 through TU2-4 included slag (5), interim stages of iron production such as globular copper (2), iron prills (139) and clippings (8), and completed products, needle fragments and chainlink. Fifteen metal artefacts, 10 iron prills and 4 clippings, were found in a charcoal-rich lens between TU2-3 and TU2-4. Seventeen pieces of mica, 59% of all the mica collected, were found in TU2. Only a single flake came from above TU2-4. Relative mica density does not correlate with evidence for iron production, as ferrous concentrations are greatest in contexts where mica is absent (Serneels, *et al.* 2018: 149). All other evidence recommends that iron smithing in daub furnaces was occurring adjacent to the well following its construction, represented by the mixed and slanted Strata E-H (Figure 3.40).

No shell was collected from the topmost layer of TU2 (Section 3.C.*II*.c). TU2-2 contained 17 shells (181.2 g), 16 Marlinspike Auger and 1 indeterminate fragment. Shell concentrations spiked in TU2-3, the most shell-rich archaeological context of 2019. Ninety-one specimens (452.1 g), 78 from edible species, *Arcidae Andara antiquate*, *Oxymeris maculata*, and *Pteriida* (Figure 4.99), were found. Seven *Neritidae* and five indeterminate shell fragments were also present. TU2-4 contained roughly half the count, but over 2/3 of the weight (318.4 g), of edible shellfish encountered in TU2-3. The 53 shells in TU2-4 came from 4 species, all present in TU2-3 except for fluted giant clam. TU2-5 contained 39 specimens (182.5 g), from the same species present in TU2-3. TU2-6 contained no shell artefacts. Shell ratios visualised in Figure 4.99 again show a site-wide trend of sustained growth, rapid decline, and abandonment.

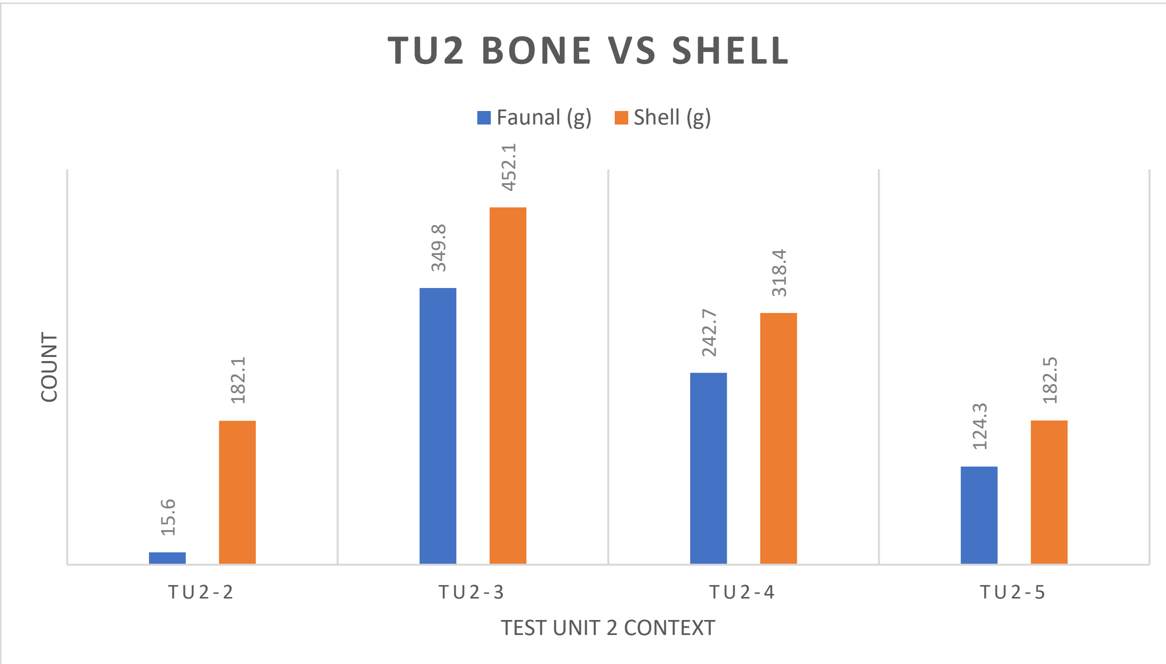


Figure 4.99: Comparison of bone and shell remains in TU2.

Stone finds, cumulatively weighing 602.2 g, were collected from the first three contexts of TU2. These finds included quartz pebbles (55%, 18) of less than 10 cm in diameter, a worked mudstone, a utilised quartz cobble, a piece of coralline limestone, a cobble of sandstone, the only piece of petrified wood from the site (20.6 g), and two indeterminate rocks. The mudstone, greater than 10 cm in diameter, appeared to have been percussion flaked on a number of surfaces. It is unclear if this was intentional reduction as part of lithic tool production. However, other evidence of rudimentary lithic technology was collected. A quartz cobble from TU2-3 was crushed on one surface, indicating that it had been used as a blunt force implement.

4.D. Conclusion

The Kingany Site II assemblage is remarkably similar to all occupational units at Mahilaka and Vohémar, indicating that the locales were not only coeval, but were engaged in mutual trade, likely via hinterland intermediaries. Locally produced ceramic styles at Kingany, while typical of those in northwest Madagascar, i.e. Antetikala and Mahilaka typologies, show strong connections with Comorian aesthetic traditions, specifically those belonging to the late Dembeni and Hanyundru series, and align with morphological ratios of the Lumbo (13th-15th centuries), Mozambique, almost due west of Boeni Bay, Mikinidani, southern Tanzania, and Swahili coastal collections (Section 4.C.*II*.d.*i*) (Vérin 1990: 45). It appears that the Kingany community was either familiar with ceramics produced throughout the Mozambique Channel and on the east African mainland, from Mozambique to Kenya, or was partially composed of peoples from those regions. While Kingany was certainly coetaneous to and linked with early Islamic sites on Mayotte and Nzwani, i.e. Domoni and Sima, the nearby island of Antsoheribory was, as local history confirms, established much later. Imported ceramics date Antsoheribory to the 15th-19th centuries, which is similar to known dates for the Cape Delgado complex of M'buizi and Tungi (14th-19th centuries). However, only chronological connections can be made between the two regions at this juncture. The main implications of the artefactual analysis are further explored in Chapter 5. However, it can be seen that Islamisation is possibly indicated by changes in ceramic forms (a gradual proliferation of communal dining vessels seems to appear site-wide, especially in the vicinity of the mosque, over time), aspects of dietary evidence (complete absence of canine and Suidae remains from faunal assemblage), and most tellingly by the construction of the mosque, and associated alterations in spatial usage and artefact frequency and distribution. It is also possible that some ceramics such as the potential tagine lid, the monochrome green-glazed sherds, and the Yemeni water-jars and incense burners might indicate the presence of Arab or other foreign Muslim traders. Alternatively, they could be indicative of long-distance trade operated by the local community.

Chapter 5. Discussion: Mozambique Channel Connections, Lifeways, and Islamisation

5.A. Introduction

Determining regional chronologies and mechanisms for Islamisation and Islamic identity through the interpretation of cultural debris, in the absence of substantive historical records, has been an objective of many archaeological studies (Section 2.B.*III*) (Insoll 2003). Such research has not been strictly limited to core regions of the Middle East, where contextualising histories are relatively abundant. Historically informed archaeological research on minor, ethnic or mercantile (Horton 2004), and major, colonial or conflicted (Carvajal 2013), Islamic frontiers has provided frameworks for understanding potential mechanisms of change (Section 2.B.*II*). These frameworks include a reasonably reliable set of tangible objects and conditions consistently met by past peoples known to be Muslim, requirements which fluctuate both chronologically and geographically (Insoll 2003; Whitcomb 2010). Methods designed to identify the presence of Islam within a material assemblage vary, based on a multitude of factors, but are typically grounded within connections to known practice (Insoll 1999: 13). Previous studies (Section 1.E.*II*) have theorised that manifestations of *ṣalāt*, e.g. mosques, prayer rugs, *turbah*, tablets of clay, typically from Karbala, used during prostration in some Shi'a sects, are one of the strongest indicators of Islamic practice (Milwright 2010: 133). Burial tradition, e.g. resting on right shoulder, face oriented towards Mecca/the *qibla*, diet, e.g. presence or absence of *ḥarām* foodstuffs or *ḥalāl* butchery techniques, and inscriptions containing Qur'anic or specific Arabic phraseology present additional quantifiable markers of Islam which can be tested for with chronological sensitivity or potentially even against recorded historical events (Baumanova 2018: 390; Bulliet 1979; Gaastra and Insoll 2020: 21). However, interpretation of such markers is complicated by the multitudes of manifestations which analogous material can take. Reflections of dietary preference, for example, are not restricted to archaeobotanical or faunal residue, though the absence of canine and *Suidae* remains can be telling, but can include shifts in ceramic forms. In Islamic East African contexts, changes might be simultaneously reflective of what has been often referred to as social "Arabisation" and manifest as a proliferation of open mouth, communal serving vessels or a decrease in fermentation paraphernalia (Loimeier 2013: 93; Pawlowicz 2013: 393; Walshaw 2010: 151). Social Arabisation is defined here as the inclusion and localisation of pan-Indian Ocean lifeways resonant of those present in some coastal communities in Gujarat, the Persian Gulf, and the Red Sea, for example.

Data collected from Kingany during the 2018 and 2019 campaigns decisively evidence the local presence of Islam, identifiable in the historical, including oral tradition, Arabic, and European accounts, (Chapter 2) and material records (Section 5.B.*I*). While these factors indicate that Islamised peoples did inhabit the area in the past, they do not necessarily stipulate how Islam arrived, the importance of that faith to that community, or what variations were present. These topics are explored through the contextualisation of the case study and its specific inferred practice in regards to its immediate (Section 5.C) and contemporary neighbours (Section 5.D).

5.B. Kingany: Data Interpretation

Analysis of observations made during the surveys and artefacts procured from excavations produced a surfeit of data points which speak to the complexity of interactions and lifeways present on the distant fringes of the Indian Ocean world in the early-second millennium. As Kingany is located in northwestern Madagascar and was demonstrably linked to other northern and likely central Malagasy settlements (Section 4.C), it is prudent that these relationships be further explored before comparatively assessing these observations in relation to contemporary island Mozambique Channel (Section 5.C) and coastal East Africa (Section 5.D) at large. This section will first outline material evidence for Islam at Kingany (Section 5.B.*I*), with chronological markers provided when possible, and then expand to discuss specific aspects of socio-cultural practice, potential change over time, and group affiliations revealed by such lifeways, all aspects critical for the interpretive positioning of Kingany.

5.B.*I*. Islamic Expression at Kingany

Site attributes that offer positive confirmation of Islam at Kingany fall into two general classes. The most persuasive of these categories were the mosques and surrounding tomb architecture (Sections 5.B.*I*.a and 5.B.*I*.b), feature types which have been comprehensively studied at contemporary coastal East African locales, and expressions of dietary practice. The southern mosque, and to a lesser degree the tomb enclosures, have been chronologically-grounded utilising absolute and relative techniques, revealing that the mosque was built in the mid to late 13th century and abandoned by the 15th century (Section 4.C.*II*.c), a timeline that facilitated artefactual data interpretation. Fluctuations in spatial function, measured in relative artefact frequency and distribution, and portable material culture throughout Site II were inspected in relationship to this centrally positioned, monumental feature and those tombs radiating from it, the results of which are elaborated below.

5.B.*I*.a. Mosque Architecture

The two mosques at Kingany, Buildings 19 and 28, are explicit confirmation for the local presence of Islamised peoples. The construction of these monumental structures would have required considerable community participation, as well as input from regional Islamic experts (Mark Horton *pers. comm.* 17 May 2018). Their prominent positioning and central location on the stabilised dune of Site II were intentional efforts on the part of the community, a physical metaphor for the faith's role at Kingany (Figure 5.1).

The floor plans of the structures were nearly identical to each other in their design, proportion, and orientation, though the layout of the northern mosque, Building 19, is slightly larger and more complicated due to the addition of a room and attached set of ablution basins (Section 3.C.*I*.b). Measurements made during the second campaign confirmed the architectural attributes sketched by Vérin (1975a: 92), with the exception of the inverted "F-shaped" feature jutting from the *qibla* wall of the southern mosque (Figure 5.1). It is possible that in the decades following its initial recording this feature deteriorated until invisible at surface level. Structure 29, east of the southern mosque, experienced this exact fate and was little more than low-rising, approximately 5 cm tall, linear mounds of rubble in 2019 (Figure 5.1). The F-shaped feature undoubtedly served no function related to the mosque, instead being a tomb positioned directly against the *miḥrāb* to access *baraka*, spiritual grace that emanates from religiously significant locales (Insoll 1999: 183). While it was not common in the region for a tomb to be invasively built abutting a *qibla* wall, similarly positioned enclosures have been recorded at the sites of Gedi and Kiburugeni, which date to the 11th-16th centuries (Garlake 1966: 129). Furthermore, the reservation of centrally located spaces, often north of the *qibla* wall, for graves is a recurrent spatial utilisation strategy observed at numerous sites in coastal East Africa (Section 5.B.*I*.b) (Baumanova 2018: 396; Fleisher 2010a).

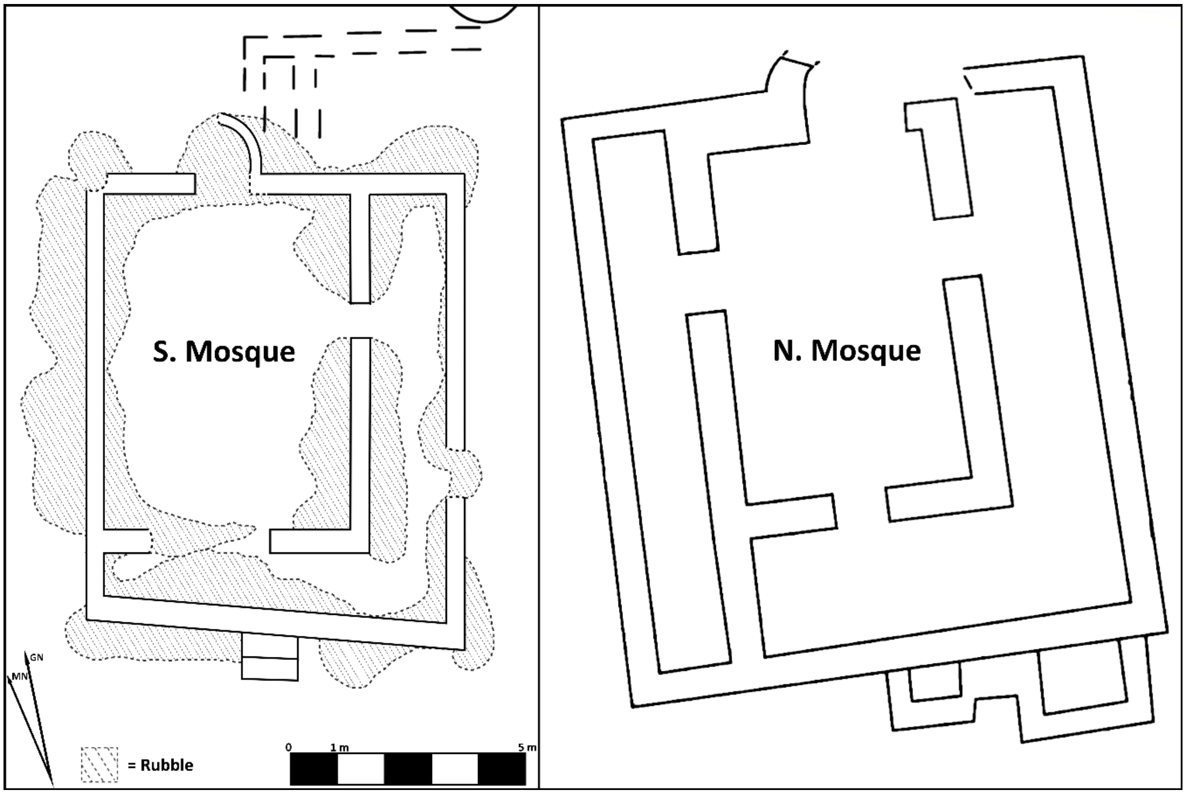


Figure 5.1: Simplified plans of southern and northern mosques.

The southern mosque, constructed in the 13th century, was built of coral rag and planar limestone conjoined by a friable lime mortar, covered in a thick plaster in a manner similar to coeval Swahili structures (Figure 5.2) (Section 3.C.*II*.b) (Wynne-Jones and Fleisher 2016: 125). While no *porites* coral was encountered within the mosque, it is probable that the now-missing decorative framing of the *miḥrāb* was made of living coral much like accents on local tombs, fitting regional trends (Pradines 2003). The *miḥrāb*s of both mosques are otherwise dissimilar to their mainland contemporaries as they appear to have been rounded on the building exterior as opposed to squared, although this rounded profile does resemble the much later *Mesquita* of Tungi (Section 3.B.*I*.e) (Garlake 1966; Horton, Fleisher, and

Wynne-Jones 2017). Additionally, concave *miḥrāb*s of this style are present in the architectural tradition of the Comorian Archipelago (Mark Horton *pers. comm.* 14 June 2021). Internal stone pillars were absent, indicating that either the roof was vegetal or that wooden supports were used. The sandstone slab located in TU1 Stratum D (Figure 4.63) would seem to support the latter as similar stones served as foundations for timber columns in the central mosque at Songo Mnara (Horton, Fleisher, and Wynne-Jones 2017: 173). It is possible that the ceiling of Kingany's southern mosque was held up by at least four wooden pillars if they were of similar proportions to those proposed for Songo Mnara's central mosque (Mark Horton *pers. comm.* 14 June 2021). Differential sterile horizons between the test units (Figures 3.35 and 3.40) demonstrate the existence of a small rise, sloping from a high point in the north to the south. The subsurface topography evidences that the southern mosque was built atop a prominence on the larger stable dune in addition to a man-made platform of layered beach sand (Section 3.C.*II*). It seems unlikely that this placement was a coincidence given the central location of the mosque and the commonality of such positioning in Swahili towns until the 13th century (Fleisher, *et al.* 2015: 107).

Figure 5.2: *Muṣallā* of the southern mosque prior to excavation, facing north.

The northern mosque is subtly more elaborate in its layout and appears to employ relatively newer construction techniques (Section 3.C.*I*.b). The coral of the southern mosque, while not necessarily cut, did appear to be sorted or roughly shaped to accommodate the mostly planar limestone components, a technique present at 13th century Swahili sites (Pradines 2012: 139). Chronological ranges for this method exactly match radiocarbon dates from beneath the southern mosque (Figure 3.37). The stones utilised for the northern mosque construction, however, were more heterogenous in their shape and size. Such material was used to reduce the labour cost and total time required to erect stone architecture at Swahili sites beginning in the 14th century (Pradines 2012: 139). For these reasons, it is logical to suspect that the northern mosque is the more recent of the pair.

Figure 5.3: Northern mosque, southern entranceway, facing north.

Until the northern mosque has been properly excavated, its sequence can only be inferred indirectly (Figure 5.3). However, following the construction of the southern mosque a population spike occurred which prompted a larger prayer space (Section 4.C.*II*.d.*i*). This newer structure would have benefitted from a larger pool of patrons than its predecessor as the Islamised portion of the community was greater, as suggested by evidence of local dietary change in accordance with theories of Islamisation in the centuries preceding its construction (Section 5.B.*I*.c.*ii*), permitting structural embellishments and the addition of quality of life features, e.g. ablution basins. The Site II *madrasa*, aligned according to the northern mosque's *qibla* wall (Figure 5.6), is further testament to the social embedding and formal practice of Islam at this time. Most telling is the erection of the new mosque on the seaward ridge of the stabilised dune (Figure 3.28). Sondages positioned to test the northern edge of the dune were by far the least productive at the site, attesting to scarce habitation of the zone, and delineated the approximate boundary of the settlement (Section 4.C.*II*.b.*i.2*). The placement of the mosque on the edge of the settlement in clear view of the ocean was surely an intentional act by the community to make the structure, and their faith, conspicuous. Fleisher has argued that similarly positioned mosque developments proliferated along the Swahili coast following the 13th century as communities refocused daily life towards maritime activity (Fleisher, *et al.* 2015: 107). The chronological distribution of imported goods, 63% of trade ceramics belonged to the 13th-14th centuries (Section 4.C.*II*), and residue of dietary preference at Site II, which reveal a gradual decrease in terrestrial hunting paired with an increased reliance on marine proteins over time (Section 5.B.*I*.c), when considered with the probable 14th century date and location of the northern mosque, fit Fleisher's theory.

The layouts of mosques at Kingany were diminutive, with *muṣallā* areas measuring just 69% (northern) and 56% (southern) of the mean "Shirazi" mosque (Section 3.C.*I*.b), a typology which they closely resemble, and a fifth the size of their contemporary at Mahilaka (Figure 5.1) (Pradines 2003: 360; Radimilahy 2017: 287; Wynne-Jones and Fleisher 2020: 387-388). The area of the *muṣallā* functions as a proxy by which to measure the Muslim male population of a Swahili village, predicated on assumptions of social obligations for such individuals to attend prayer regularly (Horton, Fleisher, and Wynne-Jones 2017: 164). Extrapolating from the calculations used to estimate congregation sizes for mosques at Songo Mnara, it was determined by the author that the northern mosque at Kingany could house between 67-71 prostrating individuals while the southern could hold 55-58 (Horton, Fleisher, and Wynne-Jones 2017: 170). Calculating congregation sizes based on average prayer rug dimensions, estimated at 1.5 by 0.6 m, finds that the mosques could hold 59 and 48 people, respectively. However, it is important to note that these two mosques, despite being constructed potentially a century apart, could have been active at the same time. Therefore, the Islamic male population at Kingany could have reached between 110 and 130 individuals. There is little architectural difference between the two structures which would identify one as a Friday, or congregational, mosque, but it is likely that the larger of the two, the northern, might have served this function if such a distinction was observed at Kingany.

5.B.*I*.b. Tomb Architecture

Figure 5.4: Site II Tomb 10.

The stone tombs at Kingany uniformly adhered to a monumental, Muslim burial tradition commonly observed at 13th-17th century Swahili sites, and were certainly erected following local Islamisation (Baumanova 2018: 390). The enclosures were all rectangular, in congruence with coastal East African traditions, with seven nearly square tombs, present in Sites I and II, similar to examples in central Kenya (Figure 5.4) (Section 3.C.*I*.b) (Wilson 1980: 45). The superstructures of these burials are unlike that of central highland Merina tradition, or of late-first millennium graves from the northeastern coast of Madagascar (Caluscusin, *et al.* 2017: 14-16; Serneels, *et al.* 2018: 115). They do, however, share aesthetic similarities to structures produced by the present-day semi-nomadic Vezo of the Malagasy Western coast and the local Sakalava population at Morafeno (Caluscusin, *et al.* 2017: 15; Dezy *pers. comm.* 20 May 2019). It is important to emphasise that, despite similarities between some Swahili, Vezo, and Sakalava tomb traditions, the subsurface conditions of the interred and associated rituals are significantly different (Caluscusin, *et al.* 2017: 15; Dezy *pers. comm.* 20 May 2019).

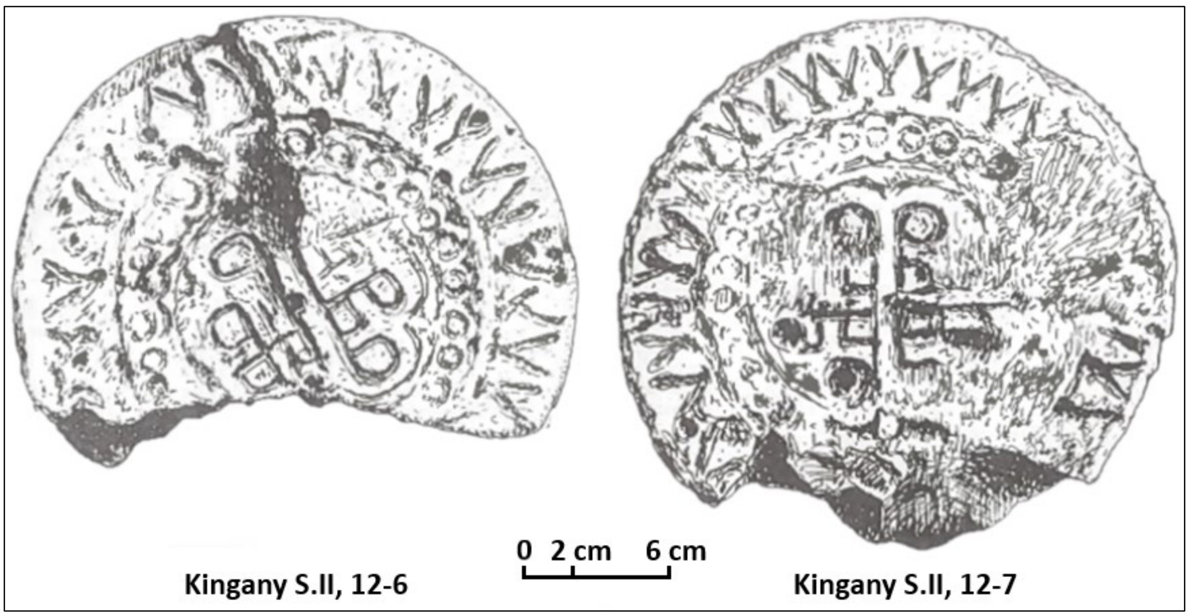


Figure 5.5: Decorative coral bosses from Site II Tomb 12, Vérin 1975$_{a}$: 333.

Most tombs were consistent to each other in their construction, coralline limestone and plaster, with but few exceptions, i.e. Site III Tomb 3. Decorations were rare and varied. Observed recurring motifs were exclusively rectangular insets, a prevalent decoration on the Swahili Coast, found on six tombs (Baumanova 2018: 391). These shallow niches likely served as platforms for funerary gifts, e.g. candles, ceramics, or incense burners (Baumanova 2018: 392; Schöller 2004: 242-243; Wilson 1979: 35). It is plausible that these recesses also held inscribed Arabic plaques. A number of such artefacts were collected by Vérin, of which few survive (Section 5.B.*I*.b.*i*) (1986: 163). Coral bosses, with elaborate and cross-fitché-like decorations, reminiscent of roundels from Kunduchi and 15th century tombs at

Mwana and Ungwana, once adorned the corners of at least two tombs, Site II Tombs 8 and 12 (Figure 5.5) (Horton 2017b: 495; Vérin 1986: 165; Wilson 1982: 15). Bosses gradually fell out of vogue, replaced by structurally affixed imported ceramics, beginning in the 15th century, which were completely absent from Kingany, recommending that the tombs predate this aesthetic shift (Vérin 1986: 165).

A significant architectural outlier from the other tombs at the site and, according to Vérin (1986: 167), one of very few examples on the island, Kingany Site III Tomb 3, a pillar tomb, belongs to a uniquely coastal East African monumental burial tradition that occurred approximately between the 13th-16th centuries (Figure 3.23) (Beaujard 2019b; Baumanova 2018: 393, 402). These highly visible monuments are thought to have housed the remains of socially prominent people and functioned as material signals to traveling Muslim merchants, communicating that a town was Islamic, or even Swahili, in a manner similar to that of the coastal mosques of the same period (Baumanova 2018: 402; Fleisher, *et al.* 2015: 107). However, Site III Tomb 3 is located behind the city wall, hundreds of metres from the shore and the settlement core, Site II, and therefore could not have been visible to passing sailors (Figure 3.18) (Section 3.C.*I*.b). The interment of such an important person, purported to have been a number of different sultans or foundational figures, such as Manafy or Kambamba, according to oral tradition, in this decidedly peripheral location is a mystery (Sections 1.F or 3.C.*I*.b) (Vérin 1986: 167). It is plausible that impermanent structures permeated out to this point in the past, but further testing is necessary to assess this theory. The positioning of these tombs does resonate with some Islamic and present-day Vezo and Sakalava traditions, wherein cemeteries are physically distanced or separated from “living” spaces to protect against a host of impurities or to maintain a distinction between life and death (Caluscusin, *et al.* 2017: 9; Dezy *pers. comm.* 20 May 2019; Insoll 1999: 170). However, similarities to present-day Malagasy groups in the region are likely coincidental as the archaeological sequence and historical/oral record mark a habitational and probable ethnic disconnect between Kingany and the current population.

Nonetheless it is clear that Site III Tomb 3 has had a lasting cultural impact on the area, a degree to which not replicated by any other burial structure in the site. To this day, currency is placed on the tomb’s plinth by the fisherfolk of Morafeno, potentially as an offering/payment/recognition of the sultan or as a negotiation with the *jinn* who reportedly inhabits the site (Section 3.C.*I*.b). While, this spiritual bartering could be construed as purely ancestor veneration, such practice arguably fits within long-standing Islamic cosmological understanding, specifically with regard to notions of spiritual protection through acquisition and proximity to *baraka* and Qur'anically attested confrontations between man and *jinn* (Schöller 2004: 116, 157). Some *ḥadīth* restrict habitual visitation of tombs, for fear of such activity creating false idols, but other texts, including the Qur'an (Sura 5:35), argue for the possibility of intercession by saints and prophets, even following death (Gensheimer 2012: 109). In the 13th century, popular embrace of notions of intercession and *baraka* within Sunni religious practice brought about a proliferation of monumental tombs, often associated with saints, throughout the Islamic world (Baumanova 2018: 394; Gensheimer 2012: 109). In coastal East Africa, some of these tombs became the subject of pilgrimages or received offerings (Insoll 2003: 102). It would appear that Site III Tomb 3 is one such burial. Regardless of its ostentatious façade, the pillar tomb in Site III matches regional urban Swahili practice and is strong evidence for an Islamic presence at Kingany (Baumanova 2018).

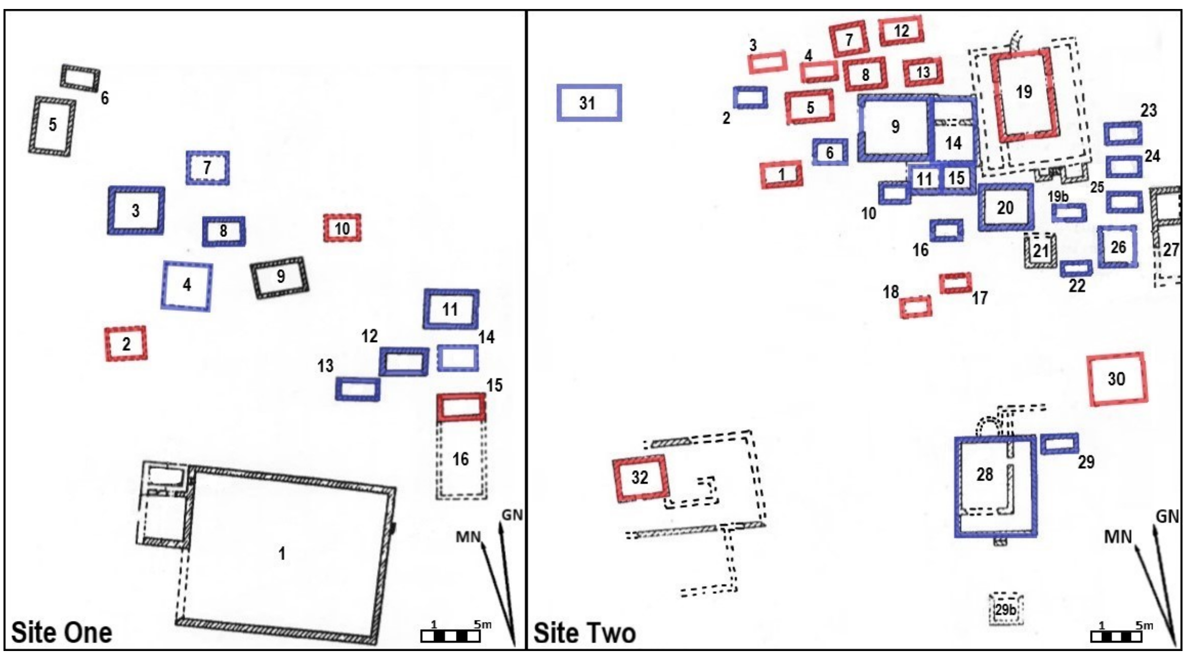


Figure 5.6: Comparative orientations for Kingany tombs, Sites I and II, based on Vérin 1986: 162, 166. Red pertains to the northern mosque, blue to the southern.

Islamic tombs are frequently positioned according to the *qibla* orientation of nearby mosques (Milwright 2010: 133). An examination of the relative orientations of Site II tombs reveals that 17 enclosures, 59%, were oriented according to the *qibla* of the southern mosque, while 11, 41%, and the possible *madrasa* were aligned with the northern one (Figure 5.6). Tomb orientation ratios in Site I nearly match those of Site II, with 8 tombs, 53%, aligned to the southern mosque and 3, 20%, to the northern (Figure 5.6). Interestingly, Site I Tombs 5, 6, 9, and 16, and all of the Site III tombs were not visibly aligned to either mosque, with Site I Tomb 16 potentially evincing a period that predates Islamic burial conformity at the site (Figure 5.6) (Section 5.B.*II*). The probability of these relationships being coincidental, when all structures in either of the respective sets vary by less than 3˚, is effectively zero. Therefore, the tombs must post-date the respective mosque which they parallel as they were built with the *qibla* walls as guides. Data indicates that the southern mosque was the older of the two structures (Section 5.B.*I*.a), thus the structures aligned accordingly, Site II Tombs 2, 6, 9-11, 15, 16, 19b, 20, 22-26, 29, and 31, potentially predate the construction of the northern mosque, despite the apparent relationship implied by the close proximity of six of these tombs to the latter structure. Seven, 64%, of the tombs oriented according to the northern mosque are not located north of the *qibla* wall, but instead in the northwestern corner of Site II, outside of the COA (Figure 5.6). This pattern could indicate that the COA was occupied with other structures at that time, confirmed in part by the sondages (Section 4.C.*II*.b.*i.1*), which prevented newer tombs from being constructed in the urban central cluster. Additionally, the absence of tombs north of the northern mosque *qibla* wall might have been dictated by the sloping dune topography at that locale, which caused the eventual collapse of the structure's now-missing *miḥrāb*. It is also possible that this was an intentional effort by the community to leave the view of the mosque from the shore unobstructed (Fleisher, *et al.* 2015). The tombs in Site I might have been a clan cemetery associated with the large stone residence in the area, Site I Building 1, or potentially some other group not present in Site II, though substantial testing would be required to test these hypotheses.

The above ground enclosures at Kingany were roughly *qibla*-aligned, although the positioning of most of the interred can only be assumed at this juncture as only

Site II Tomb 12 has been excavated. Frequent subjects of syncretism and cultural preferences, the actuality of regional, and intra-regional, variance in Islamic burial practice make it impossible to know the exact contents of a tomb prior to excavation (Insoll 1999: 199-200; Petersen 2013: 241). However, Kingany's tombs are nearly homogenous in their chronology, construction, material, and orientation. Therefore, it is not inappropriate to draw forth general hypotheses regarding the conditions by which the individuals beneath the enclosures were buried based on Vérin's excavation of Site II Tomb 12, keeping in mind the possibility that some older burials might have much younger markers that do not perfectly align (Fleisher and Wynne-Jones 2012: 195). The body in Site II Tomb 12, which was positioned in a recess paralleling the northern enclosure wall, mirrored the orientation of the stone superstructure (Vérin 1975$_{a}$: 332-334). The deceased was on their back with their head rested on a stone and turned to face Mecca, a deviation from what is considered standard Islamic burial positioning (Insoll 1999: 168; Vérin 1975$_{a}$: 332-334). The supine positioning does not conform with contemporary regional Muslim burials, like at Acoua, but does fit modern Malagasy, e.g. Sakalava and Vezo, customs (Caluscusin, *et al.* 2017: 15; Pauly 2014: 78). However, the orientation of the deceased, specifically the propping of the head to face the *qibla*, still fulfilled the overall objectives of traditional Islamic practice. The body was likely wrapped in cloth, as was often the case in Islamic burials, as there was no evidence for a coffin (Insoll 2003: 17; Vérin 1975$_{a}$: 332-334).

While Site II Tomb 12 contained no associated artefacts, the presence or absence of grave goods at Kingany at large can only be speculated upon, despite some *ḥadīth* and Islamic traditions advising against burying objects with the dead (Baumanova 2018: 390; Milwright 2010: 131; Vérin 1975$_{a}$: 334). The approximately coeval site of Vohémar contained hundreds of presumably Muslim burials, marked with enclosures similar to those at Kingany, rich in grave goods of chlorite schist, imported fine ceramics, and metal jewellery (Section 2.E.*IV*.a) (Dewar and Wright 1993: 444). Similarly, less opulent, but still culturally significant finds of thousands of quartz pebbles were discovered accompanying graves at Songo Mnara and might have been common in contemporary Swahili contexts (Horton, Fleisher, and Wynne-Jones 2017: 182).

According to methods utilised by Horton at Shanga (1996b: 75), a maximum 3% of a coastal East African population would be interred beneath monumental tombs, Kingany's 47 tombs and two smaller graves would represent approximately 1,650 total inhabitants over its occupation. However, it seems unlikely that this number includes the potentially pre-Islamic period at Kingany, 11th-12th centuries, as this community was not constructing in stone and certainly observed other burial traditions. Regardless, this estimate seems appropriate for the Islamic period of the site given the estimated maximum capacity of the mosques of just over 100 individuals (Section 5.B.*I*.a).

Highly ornate, carved coral, Arabic inscriptions collected by Vérin from tombs at Kingany in the 1960s shed light on the potential origins of local Islamic faith and symbolism embraced by the population of early-second millennium Boeni Bay.

5.B.*I*.b.*i*. Tomb Inscriptions

Carved coral inscriptions constitute an important snapshot of the culture of Kingany (Section 1.F), as they are able to divulge details of social ideals within the community, albeit in a relatively indirect fashion. The language, alphabet and otherwise, utilised for these objects, and the symbols which frame the text, communicate socio-cultural realities at Kingany just as loudly as the Islamic verses themselves (cf. Blair 1998). Understanding the manufacture of the plaques is important for contextualising these objects in regard to northwestern Madagascar at large.

Vérin encountered at least five inscribed coral tablets at Kingany in the 1960s, three of which he collected (1986: 163). These surviving examples, today held at the *Musée d'Art et d'Archéologie*, Antananarivo, came from Site I Tomb 12 (Figure 5.7) and Site II Tomb 8 (Figure 5.8). The Site I Tomb 12 rectangular plaque, measures 52 by 20 by 13 cm and has an Arabic inscription broken into four lines (Vérin 1986: 163). The epitaph begins with "بسم الله الرحمن الرحيم" (In the name of Allah the most gracious and merciful) followed by "هذا الدين حق لا حي إلا الله" (This religion is [true or right] no one is going to live except Allah) (Figure 5.7) (Muhammad Alhazmi *pers. comm.* 12 December 2020). The next lines were "غاب محمد" (Muhammad disappeared) and "رحمها الله رحمة الأبرار. غفر الله لها" (May Allah grant her mercy of the righteous. May Allah

Figure 5.7: Tombstone from Site I Tomb 12, courtesy of Chantal Radimilahy.

forgive her) (Figure 5.7) (Muhammad Alhazmi *pers. comm.* 12 December 2020). The opening line connotes the deceased's Muslim identity. The second and third lines were intended to console the bereaved, emphasising that only Allah lives forever and not even the Prophet was immune to death (Muhammad Alhazmi *pers. comm.* 12 December 2020). The closing line identifies the deceased as a woman. The request for Allah's mercy and forgiveness in the fourth line is a common sentiment in Islamic funerary inscriptions, present from the earliest periods (Diem 2004_a: 163). Islamic religiosity and customary accompanying language is expressed with confident familiarity throughout the epitaph.

As Site I Tomb 12 was aligned according to the *qibla* of the southern mosque, it is hypothetically older than Site II Tomb 8, counter to Vérin's postulations (Section 5.B.*I*.a) (1986: 163). The inscription being in an elaborate Arabic script, missing diacritic markings, spoken in a tone of authority displaying a confident grasp of Islamic custom could be reflective of the peoples present and the timeframe in which the plaques were produced. Regionally adapted scripts, specifically *Kiarabu*, old Kiswahili used from the 11th century on some coastal tombs and coins, or *sorabé*, a Malagasy variant developed by the Antemoro as early as the 15th century, appear to be absent at Kingany (Ferrand 1905; Griffin 2009: 20; Zhukov 2004: 1). This would not have been abnormal as Arabic was used across coastal East Africa in the Shirazi period. In fact, strikingly similar epigraphy to that of Site I Tomb 12 was present on the 12th century coral panels of the Kizimkazi mosque of Zanzibar, inscriptions which the art historian Samuel Flury argued were the work of Sīrāfi craftsmen based on attributes of the script employed, although Site I Tomb 12 could be no older than the 13th century (Flury 1922; Horton 2017_b: 489; Lowick 1985: 84-85). Comparable Arabic inscriptions were also found at Kilwa Kisiwani, including as part of the 14th century Husuni Kubwa (Chittick 1974_b: Plate 104, 107).

The text of the Site I Tomb 12 tablet is surrounded by two elevated, decorative frameworks (Figure 5.7). The highest, and outermost frame is embellished with approximately 20 octagrams on each vertical axis and 11 on each horizontal for 60 total (+/- 3), possibly symbolic of the *Rubʿ al-Ḥizb* utilised in the Qur'an to separate the text into 60 equal groups. Eight-pointed stars of this type, sometimes known as the Star of Venus, have a deep history of use in the Mediterranean and Middle East, especially Mesopotamia, appearing in ancient Sumerian artistry as the Star of Inanna/Ishtar and even as components of the mid-20th century Iraqi flag and coat of arms (Black and Green 1992: 169-170; Collins 1994). The symbol has been widely used in Islamic contexts throughout history, including on the Swahili Coast where it was photographed on textiles in 19th century Zanzibar (Ryan 2017: 117-118). The inner frame of the tombstone is decorated with a repeating, but unevenly distributed, incised abstract arch motif (Figure 5.7). Finally, occupying the lower eighth of the central plane, below the epigraphy, a series of interconnected *arabesque* knots were carved in relief.

Figures 5.8 and 5.9: Left: Site II Tomb 8, west wall plaque**; Right:** Site II Tomb 8, north wall plaque, courtesy of Chantal Radimilahy.

The intricately decorated Site II Tomb 8 *porites* tablet, pried from the western wall of the enclosure by Vérin, measured 70 by 43 by 13 cm and contained Arabic epigraphy in a *Naskh* script (Figure 5.8). The inscription begins with a singular unintelligible word to the left of the lamp. The first full line reads “بسم الله الرحمن الرحيم . عوال” (In the name of Allah the [most] merciful and the [most] gracious. Mourner) followed by a second line, "[لا إله إلّا] الله محمد رسول" ([There is no deity except] Allah. Muhammad is the prophet) (Figure 5.8) (Dionisius A. Agius and Muhammad Alhazmi *pers. comm.* 14 November 2020; Mohammed Asiri *pers. comm.* 27 October 2020; John P. Cooper *pers. comm.* 9 April 2021). The third full line reads "الله صل الله عليه وسلم" ([of] Allah. Peace and blessings of Allah be upon him) and the fourth line is "[هذ]ه الحرة المها[جرة إلى الله]" (This is the free-born woman [who departed to Allah]) (Figure 5.8) (Dionisius A. Agius and Muhammad Alhazmi *pers. comm.* 14 November 2020; John P. Cooper *pers. comm.* 9 April 2021). The two closing lines have yet to be suitably deciphered.

The epigraphy is telling. Not only is the *Naskh* Arabic beautifully carved by a masterful artisan, a production not unlike 14th century inscriptions found in Kilwa, onto a regionally important material, but clearly bespeaks the role of Islam to the community, or at least to those influential enough to be buried beneath monumental superstructures (Sutton 1998: 127). The first three lines of the inscription function as a framing introduction, firmly pronouncing the religious allegiance of the interred individual, presumably, and the cosmological protection under which they are now sheltered (Figure 5.8). The tone and structure of this language, which contains the frequent invocation of Allah and the Prophet with accompanying *durūd sharīf*, a customary complimentary phrase following the name of Muhammad in Islam, reveals that the faith was well embedded culturally at the time of this burial (Zubair 2016). This was to be expected given that Site II Tomb 8 belonged to the later occupational phase when large portions of the community were Islamised, indicated by its alignment according to the *qibla* of the second, larger, mosque at Kingany (Section 5.B.*I*.b). This association would place the production of the tombstone roughly between the 14th and early 16th centuries. The final line divulges details of the individual (Figure 5.8). The interred was a freeborn, Muslim woman, stated explicitly with the term *al-ḥurrah*, potentially of significant standing, implied by the tomb, its embellishments, and central location (Figure 3.20). Direct statements of status using *al-ḥurrah* appear on tombs by at least the 12th century, with numerous known examples from Aden (Diem 2004a: 13). The distinction of "freeborn" would only have been a necessary relational expression if all individuals of the community were not unconditionally so (Middleton 1992: 90). Thus, Kingany housed a slave society. This is cognate with regional oral tradition, later European historical texts, like that of friar Luís Mariano's 1613-1620 missionary expedition to Antsoheribory, among other locales, and archaeological data for contemporary sites, namely Mahilaka (Dewar and Richard 2012: 506; Beaujard 2019$_{b}$: 374, 558; Vernet 2009: 42). The epitaph closes with "depart to Allah" which has been a recurring motif in Islamic funerary epigraphy since at least the 10th century (Diem 2004$_{a}$: 508, 531). Elaborated, but kindred, variations of this sentiment were found on Yemeni graves in the 14th century (Diem 2004$_{a}$: 462). Vérin reported three additional, cardinally positioned, tombstones on the walls of Site II Tomb 8, all in various states of disrepair (Figure 5.9) (1975$_{a}$: 330-331). He believed that the inscription on each of these four plaques was identical, though this could not be independently confirmed during this study (Vérin 1975$_{a}$: 330-332).

The western wall tablet is carved to resemble an arched *miḥrāb* surrounding the text (Figure 5.8) (Vérin 1986: 163). The stylised likeness of a glass lamp is attached to the upper niche. Glass lamps of this type, including some elaborately decorated variations, were commonplace throughout the Islamic world from at least the 8th century, a tradition potentially inspired by Levantine Jewish temple culture (Flood 2000: 49). It is probable that the placement of a lamp in a *miḥrāb*, and the symbolic portrayals of this practice, also served as material reminders and literal depictions of the *Ṣūrat al-Nūr* "Light Verse" which reads "Allah is the light of the heavens and the earth: the likeness of His light is as a niche wherein is a lamp…" (Sura 24:35). The lamp iconography could also symbolise the Prophet, who has on occasion been referred to as a "a bright lamp", or the deceased themselves, having been made "pure patrons signs and lamps of right guidance" by God (Diem 2004$_{b}$: 118). Carved representations of this tradition appear in mausoleum reliefs belonging to the Persianate Seljuq Empire from at least the 12th century in addition to 14th century marble gravestones in Kilwa and Mogadishu which were likely manufactured in Cambay, Gujarat (Canby, Beyazit, and Rugiadi 2016: 262; Lambourn 1999). The segmental arch of the niche was decorated with a series of approximately 12 roundels in relief, while the "vertical framework[s]" were embellished with a pattern of lotus flowers and parallel horizontal bars (Figure 5.8) (Vérin 1986: 163). However, the crown and nearly half the span of the arch has been lost. Four lotus flowers, an opposing pair in boxes atop triangular brackets and two free-floating, were set perpendicular to the vertical frame, bisecting the base of the arch at the narrowest point of the lamp (Figure 5.8). One of the free-floating lotus flowers had been removed prior to Vérin's excavation (Figure 5.8) (1986: 163). This lotus style, described by Vérin as "*indien islamique*", resembles funerary motifs of the Swahili northern terminus, namely at Koyama, Somalia (1975$_a$: 331). These same lotuses were also embedded in the corners of the trifoliate floral tracery on the framework of the now illegible northern plaque (Figure 5.9).

The limited epigraphic evidence available for Kingany can be confidently defined as products of the western Indian Ocean world, with material analogues found on the Swahili Coast and considerable cultural inspirations from the Persian Gulf, Yemen, and even the Indian Subcontinent (Baumanova 2018: 395; Diem 2004$_a$: 13; Vérin 1986: 163). Though it is notable that the surviving and collected tombstones all belonged to women, it is within Swahili practice to bury women of high or religious standing in monumental tombs (Baumanova 2018; Gensheimer 2012). Therefore, the analysed examples from Kingany were not evidence enough to argue for an intentionally gendered burial tradition. Despite being of like material and shape, the pieces reviewed in this thesis were drastically different in orthographic style and ornamentation. It is highly unlikely that the tombstones were produced by the same artisan given the disconnect in aesthetic approach. It is not yet clear whether these items were locally produced.

5.B.*I*.c. Diet

Changes in dietary preferences and/or lifeways were documented in the faunal and ceramics remains at Site II, observations which did not entirely correlate with expectations of an Islamised community, despite irrefutable evidence that Kingany was such. Findings will be discussed in terms of relative distribution and chronology.

5.B.*I*.c.*i*. Distribution

The following interpretation is based on data presented in Chapter 4. Faunal remains from probing pits, PP2, PP4, PP8, PP10, PP11, PP13, PP15-PP16, and PP22-PP25, were dominated by cattle (*Bos sp.*), followed by tortoises, and fish (Figure 4.40)

(Section 4.C.*II*.b.*ii*). While this dataset does not depict consumptive change over time, it did allow for an examination of diet without strict stratigraphic consideration or concern for a deep chronology, as the pits were only 99 cm deep on average. Interestingly, spatially constrained concentrations did appear.

COA sondages contained almost exclusively cattle remains, PP22 acting as the sole outlier with unidentified mammal bone and no *Bos sp.* present (Section 4.C.*II*.b.*ii*). Shell was uncommon within these sondages, further reinforcing the localised importance of cattle (Section 4.C.*II*.b.*iv*.*1*). The COA, a domestic complex with evidence of cottage textile and pottery industry, had ceramics typologically similar to those of Mahilaka Occupation units *Ib-IIb* and the Irodo series, with a lone example of potential 13th-14th century Kilwa "Wealed Ware" (Section 4.C.*II*.b.*i*.*1*) (Radimilahy 1998: 148, 156, 171; Vérin 1986: 144). Closed or restricted vessel forms occurred at over twice the frequency of open variants indicating a proclivity for individualised consumption (Figure 5.10) (Section 4.C.*II*.b.*i*.*1*).

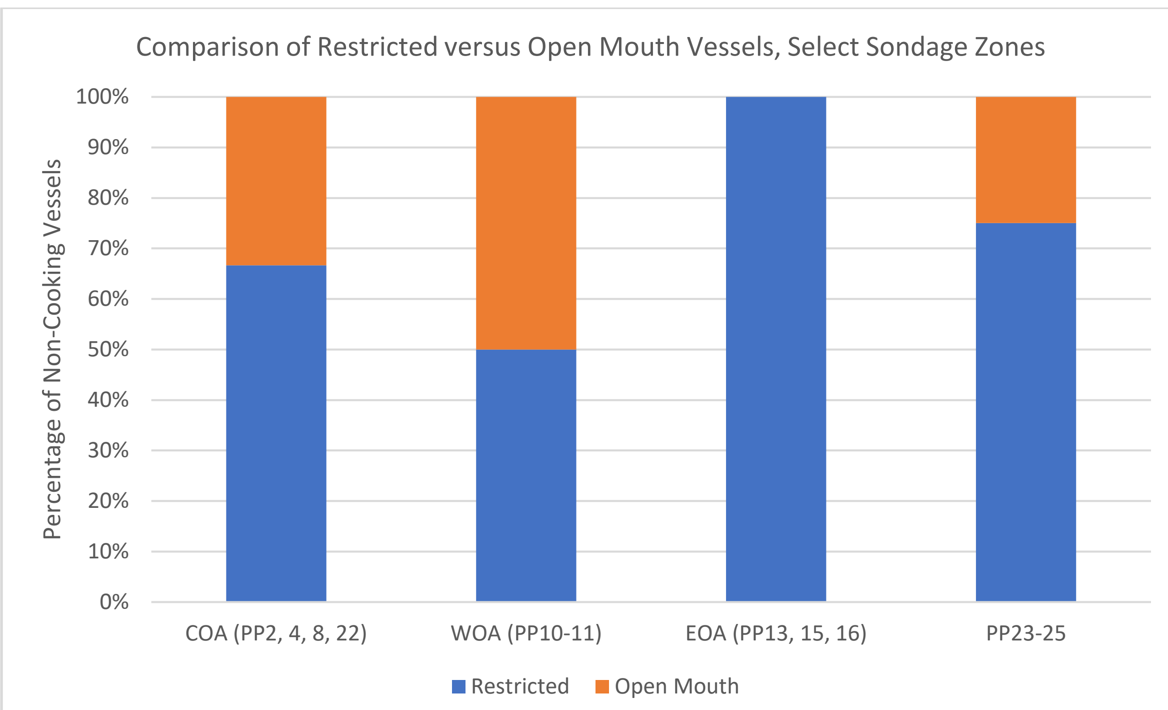


Figure 5.10: Comparison of restricted versus open mouth vessels, select sondage zones.

The faunal profile of the WOA, PP10-PP11, mirrored the mean composition of all probing pits with, in declining order, cattle, tortoise, and fish present (Figure 4.40). However, PP10 contained only cattle bones and no shell, while PP11, located 10 m to the southwest, possessed a diverse faunal assemblage with the most shell of any sondage, including burnt samples from both categories (Section 4.C.*II*.b.*iv.3*). The WOA ceramic assemblage, composed of Antetikala and Kingany phase specimens with evidence of home textile production, was split evenly between open mouth and restricted opening ceramic forms revealing no specific dining preference (Figure 5.10) (Section 4.C.*II*.b.*i.3*) (Wright, *et al.* 1996: 46, 51).

Bones from the EOA were entirely those of tortoises (Figure 4.40). PP13 and PP16 also yielded fragments of marlinspike auger shell, but were relatively devoid of other dietary residue (Section 4.C.*II*.b.*iv.4*). The ceramic assemblage of the zone, typologically associated with the Kingany phase and Mahilaka Occupation unit *IIa*, appears to be more akin to an industrial area, evidenced by a ceramic tuyère which would have been used for a furnace (Figure 4.27) and a relative dearth of domestic type pottery. Those domestic ceramics present were exclusively forms suited to individualistic consumption or cooking (Figure 5.10) (Section 4.C.*II*.b.*i.4*).

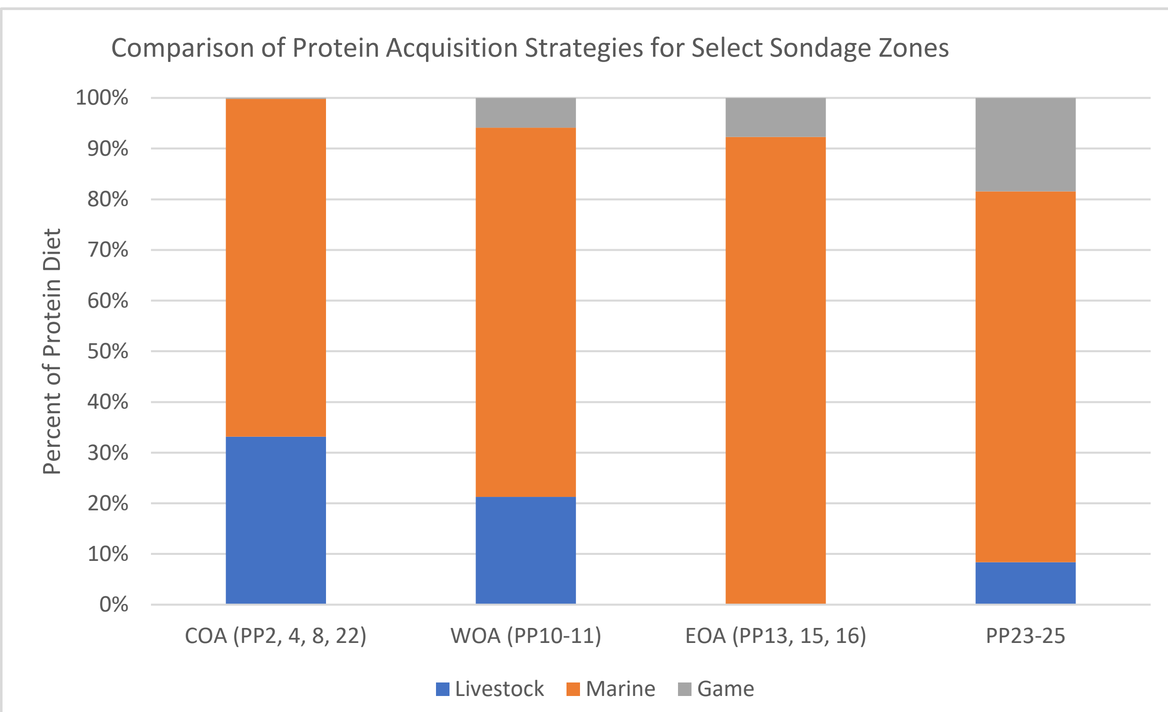


Figure 5.11: Comparison of protein acquisition strategies for select sondage zones.

Probing pits nearest the southern mosque were rich in their faunal diversity. Fish species, recovered from PP24 and PP25, dominated the assemblage, followed by cattle, not present in PP25, and tortoise (Figure 4.40) (Section 4.C.*II*.b.*ii*).

However, few marlinspike auger shells were collected from these pits (Section 4.C.*II*.b.*iv.5*). The ceramic assemblage of PP23-PP25 was primarily that of a domestic context, including evidence for textile production in the form of spindle whorls, which exhibited a strong proclivity towards individualistic vessel forms as only two sharing bowl specimens were recovered (Figure 5.10) (Section 4.C.*II*.b.*i.5*). This assemblage was typologically associated with Mahilaka Occupation units *IIa* and *IIb* and 12th-14th century layers at Irodo (Radimilahy 1998: 171; Vérin 1986: 144).

The probing pit data would suggest that a fish-based diet, relatively free of shellfish, was consumed in the immediate vicinity of the southern mosque, in direct contrast to the nearby bovine-dominated COA and the mollusc-heavy, but overall diverse, protein consumption in the WOA (Figure 5.11). If each sondage assemblage is understood as roughly contemporary, inferred from their close positioning, stratigraphic similarities, and relative depths, it could be argued that individual oriented dining and consumption of *ḥarām* species, namely tortoises, according to the *Shāfiʿī madhhab*, persisted at the site following Islamisation, including in close proximity to mosques, albeit in lower densities and with some evidence of sharing vessels.

Interpreting this distribution through the lens of perceived worth, extrapolated from present-day value systems at Morafeno, might evidence some degree of social stratification between non-stone dwellings at Kingany. Fisherfolk who exploited both inner reef molluscs and a plethora of bony fish species occupied the site. Thus, it is probable that marine proteins were readily available and, as a result, inexpensive. Similarly, the quantity of cattle bone present in the sondages evidence relative accessibility, though it is certainly the case that this protein was comparatively more expensive due to the labour cost of animal husbandry and the perception of finite resource depletion following slaughter.

Present-day Malagasy people will sometimes refer to *zebu*, humped, long-horned cattle who serve as beasts of burden, transport, and protein sources for much of the island, as “*or rouge*”, red gold. This implies an inherent value that transcends simple commodification. The term also bespeaks the role that *zebu* in Madagascar have held in symbolic social value and as a core component of ritual, pointedly depicted in the prolific iconography of the beasts in archaeological contexts and in the present-day (Bloch 1985; Evers and van der Zwan 1998). Cattle were also both a prized and major commodity for the Comorian Archipelago, attested to by European sources from the 16th century, including observations by John Davis, Richard Cocks, and Peter Mundy (Newitt 1983: 149-153). The Merina Kingdom of Madagascar similarly valued *zebu* following the 16th-17th century rule of King Ralambo, who tamed the wild herds of the central highlands according to oral tradition (Bloch 1985: 631; Raison-Jourde 1983: 141-142). Comparable strains of reasoning regarding social creations of value, though not as implicitly linked to ritual application as *zebu*, have been applied to beads and textiles in the Kilwa Archipelago (Wynne-Jones and Fleisher 2016).

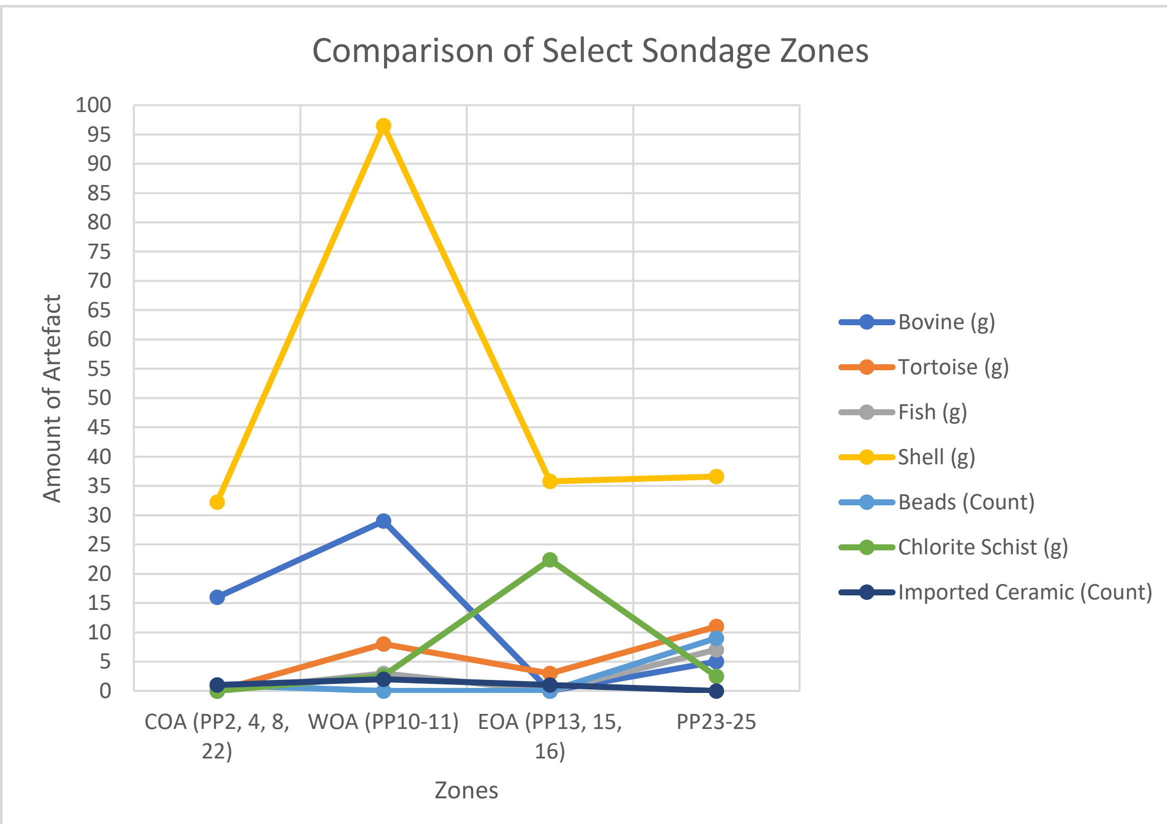


Figure 5.12: Comparison of artefact compositions for select sondage zones.

Value and access to tortoises, which were hunted and kept in captivity, would have fallen somewhere between cattle and marine resources, though there is no direct historical evidence to support this. Imported goods, beads, ceramics, and chlorite schist, serve as another tangible indicator of relative wealth, as their acquisition cost would presumably be greater than locally produced goods.

Operating with these inferences in mind, it can be assumed that zones with greater percentages of bovine and tortoise remains were wealthier and/or agropastoralists, while those which relied more heavily on fish or molluscs were less wealthy and/or fisherfolk/divers. Within this theoretical model, protein consumption could reflect general wealth, broad occupational niche, and possibly distinguish between ethno-cultural groups, when personal or religious preference are not considered. Note that this model is simplified so as to isolate broad trends, as evidence would suggest that most, if not all, of the non-stone dwellings at Kingany practised a plethora of occupations, potentially with gender-based division of labour still observable at Morafeno.

The COA housed a distinct group who preferred cattle and consumed less shellfish than any other zone, with limited access to luxury imports, perhaps indicative of subsistence agropastoralism (Figure 5.12) (Section 4.C.*II*.b.*i.1*). The WOA and the area immediately adjacent the southern mosque (PP23-PP25) appears to have been inhabited by a heterogenous population, evidenced by the wide range of protein sources exploited there (Figure 5.12). PP23-PP25 appear to represent a comparatively more affluent zone, however, as these sondages contained greater quantities of imported goods, except for imported ceramics which were suspiciously absent (Section 4.C.*II*.b.*i.5*). Conversely, while no beads and little chlorite schist was recovered from the WOA, imported ceramics of Middle Eastern origin were found (Section 4.C.*II*.b.*i.3*). The EOA is an outlier with primarily tortoise remains present and relatively few imported goods, with the notable exception of chlorite schist objects (Figure 5.12). Interestingly, this artefact signature recommends a homogenous, decidedly Malagasy presence in the EOA as tortoises were historically exploited by indigenous peoples and for centuries chlorite schist was a locally manufactured and internally traded luxury good (Dewar, *et al.* 2013: 12587; Radimilahy and Crossland 2015). Unfortunately, no stone houses were investigated during this study, and Vérin did not consistently record fauna or shell during his excavations of three stone residences at Kingany, so it is not possible to contrast these results or apply this model to his data.

5.B.*I*.c.*ii*. Chronology

Stratigraphic and contextual changes were taken into consideration while excavating the two test units, and found artefacts were sorted accordingly. This data recovery methodology facilitated the creation of a chronologically informed archaeological sequence. Therefore, the artefactual contents of TU1 and TU2 were used to investigate dietary change over time at Site II. Data will be examined beginning with the oldest strata in each unit.

5.B.*I*.c.*ii*.*1*. TU1

TU1 contained bone fragments from at least 16 species from the taxonomic classes Aves, Mammalia, Osteichthyes, and Reptilia, a greater diversity of fauna than observed in the sondage assemblages (Sections 4.C.*II*.c.*ii* and 5.B.*I*.c.*i*). No faunal samples were collected from TU1-1, Stratum A, due to it being topsoil nor TU1-9, Stratum I, because of unit wall failure (Section 3.C.*II*.b).

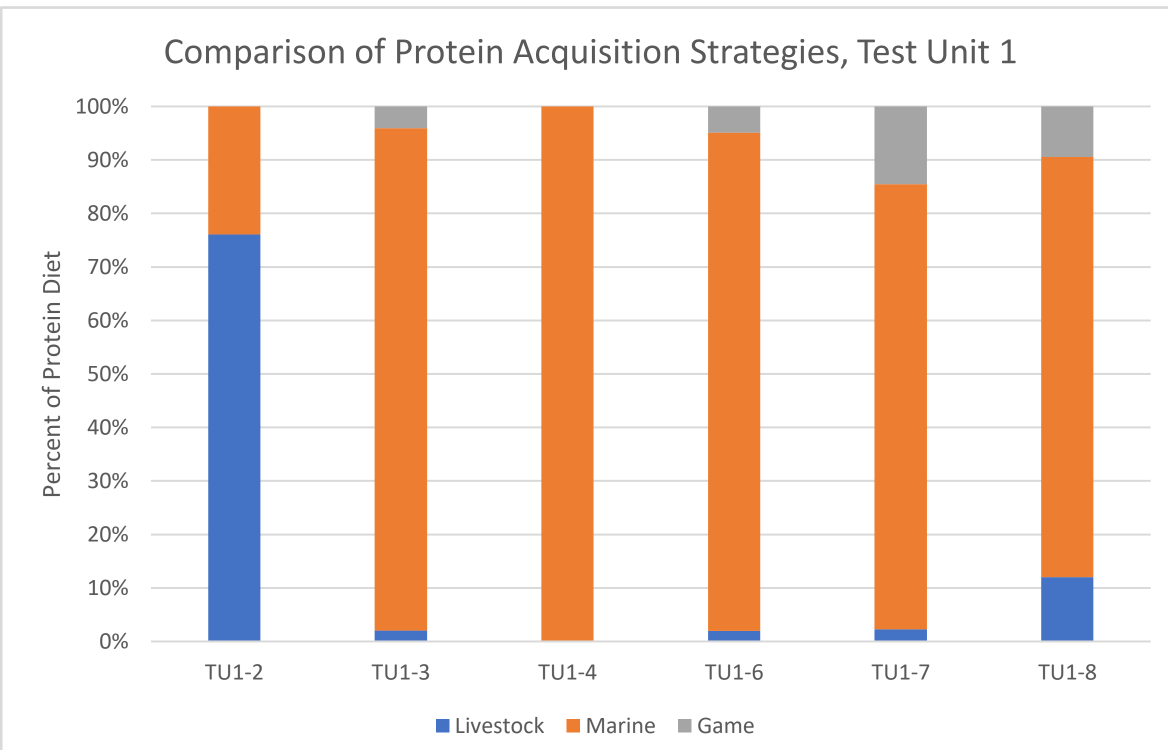


Figure 5.13: Comparison of protein acquisition strategies, TU1.

Faunal remains were most plentiful in contexts between the terminal, non-archaeological soil, Stratum J, and the foundational level of the southern mosque, Stratum D, after which they disappear almost entirely (Figure 4.61) (Section 4.C.*II*.c.*ii*). Species variance and quantity was greatest in TU1-7, Strata E-G (Figure 4.61). This data demonstrates that numerous animal acquisition strategies were employed at Kingany, specifically animal husbandry (cattle, chickens, ducks/geese, goats, and tortoises), fishing, and hunting (ducks, swamphens, tenrec, and giant tortoises), from the earliest occupational phase at the site, approximately 11th-12th centuries (Sections 3.C.*II*.b and 4.C.*II*.c.*ii*). This included the exploitation of *ḥarām* species such as tenrec and tortoises, the latter of which was undoubtedly processed and cooked (Section 1.E.*I*). Interestingly, Vérin recovered two ribs from *Dugong Dugon*, Malagasy Dugong, a species no longer present in the region while excavating Site II Building 27, evidence that game hunting was not strictly terrestrial in the early periods (1986: 167).

When interpreting the relationship between animal acquisition strategies through material remains, it is important to consider potential preservation biases and material disparities, e.g. marine shells generally possess greater mass than like-sized bird and fish bone, the impact of which could shift the data in favour of an ocean-oriented diet (Section 4.C.*II*.c.*iv*). Strategies for mitigating these pitfalls, specifically those that examine individuals and their potential caloric contributions, were unable to be implemented for the Site II faunal assemblage, as the MNI was effectively equal to one (Section 4.C.*II*.b.*ii*). That said, marine sources were the primary protein source for the earliest residents of the site, represented by TU1-9 through TU1-6, with hunted game and livestock roughly even (Figure 5.13). This trend is greater than would be expected for opportunistic marine exploitation. Compositional percentages seen in later strata, TU1-4 through TU1-2, would recommend a continuation of this pattern until the final occupational phase of Site II at which point a massive swing in favour of animal husbandry occurs (Figure 5.13). However, those younger contexts contain roughly 6% of the faunal residue encountered in the pre-mosque strata, TU1-6 and below, in addition to less burnt remains, charcoal, and local ceramics (Section 4.C.*II*.c). Therefore, this smaller sample could be potentially skewing the interpretation towards a more niche lifeway than that which might be expressed by a more ample dataset. This disparity in artefact density and composition is assuredly the result of substantial spatial reprioritisation, domestic to religious, that coincided with the 13th century construction of the southern mosque (Section 4.C.*II*.c).

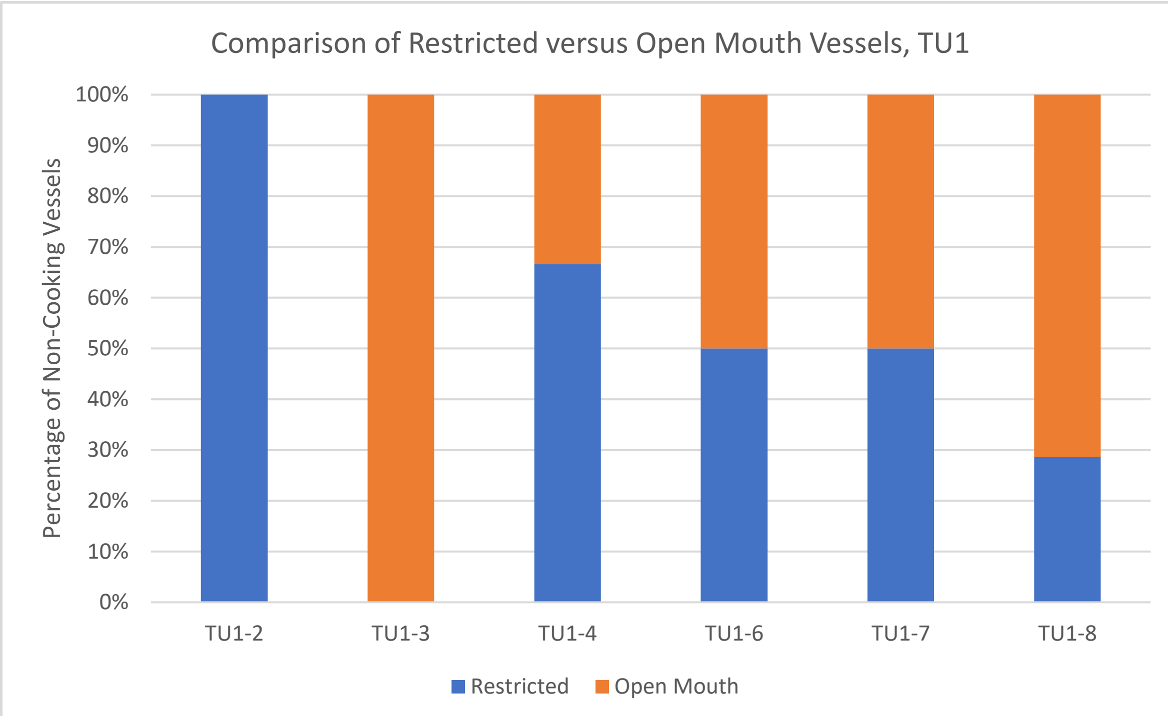


Figure 5.14: Comparison of restricted versus open mouth vessels, TU1.

The ceramic assemblage of TU1, when chronologically adjusted, reveals a gradual transition from a series that utilised restricted and open vessel forms in effectively equal proportions, observed in the oldest Antetikala phase strata, TU1-7 and TU1-8, to a bowl/open dish dominated collection after the 13th century (Figures 4.60 and 5.14) (Section 4.C.*II*.c.*i*). While TU1-2 might appear to depict a chaotic flip to restricted forms in the last occupational phase of Site II, this context contained a single sherd whose form could be identified, a fifth of the average interpretive samples from other contexts. For that reason, TU1-2 is not statistically relevant. The adjustment in ceramic preference depicted in Figure 5.14 directly corresponds with a sharp decrease in the occurrence of *ḥarām* fauna in TU1, which are effectively absent by TU1-6 (Figure 4.61). The disappearance of endemic giant tortoises from the diet could have been a consequence of resource overexploitation and depletion, as *Aldabrahelys abrupta*, present in the pre-mosque strata, is believed to have gone extinct in the early 13th century (Crowley 2010; Pedrono 2013: 502). This, however, does not explain the simultaneous absence of other game species. Therefore, these trends appear to be the product of intentional localised dietary change.

The oldest stratigraphic context of TU1, dating to at least the 12th century (Section 3.C.*II*.b), was rich in habitational debris and positioned directly atop, and intruding, into the virginal dune soil. General domestic material continued up until the foundational strata of the mosque, Stratum E, recommending that the stone structure was not preceded by a wooden analogue in the same location. Members of the community within this space were gradually adjusting their foodways and ceramic preferences in a manner that would suggest a growing communal dining practice and some observation of *ḥalāl* dietary restrictions, broadly conforming with material manifestations of Islamisation in coastal East Africa (Loimeier 2013: 93; Pawlowicz 2013: 393; Walshaw 2010: 151). These lifeway changes culminated in a drastic spatial reprioritisation with the 13th century construction of the southern mosque. Together, TU1 and sondage data indicate that remains immediately beneath the floor of the southern mosque belonged to at least a partially Islamised, heterogenous community, that did not have uniform foodways (Section 5.B.*I*.c.*i*), and likely began processes of Islamisation, which included the adoption of social aspects of pan-Indian Ocean lifeways, in the century prior to stone construction. This transition coincides with a period of widespread Islamisation along the East African coast (Horton, Fleisher, and Wynne-Jones 2017: 164). Furthermore, the faunal data present in the oldest strata of TU1 possibly reveal a pre-Islamic settlement at Kingany, dating to the early 11th century, contrary to local foundational legend (Wright, *et al.* 1996: 47).

5.B.*I*.c.*ii*.*2*. TU2

TU2 contained bone fragments from at least 21 species belonging to 5 taxonomic classes, comprising nearly two-thirds of all faunal remains from Site II by weight, not including shell (Section 4.C.*II*.c.*ii*). No bone or shell was collected from TU2-1.

As seen in the TU1 faunal assemblage (Section 5.B.*I*.c.*ii*.*1*), indirect evidence for a diverse spectrum of animal acquisition strategies was visible in the archaeological remains of TU2 (Figure 5.15). Marine resources again appear to have been a primary protein source throughout all occupation phases. Animal husbandry became increasingly important over time, until a significant fall-off occurred in TU2-2, 15th century, while contributions from hunted game decreased drastically in younger contexts. Typological analysis of Yuan Longquan celadon from TU2 place the terminal strata, inspected by TU2-5, as roughly contemporary with TU1-7, early 13th century (Section 5.B.*I*.c.*ii*.*1*) (Hannah Parsons-Morgan *pers. comm.* 26 June 2019). Fluctuations visible in the TU1-7 to TU1-6 data demonstrate possible observation of *ḥalāl* dietary restrictions, evidenced by local choice of animal proteins, occurred at this time, practices mirrored by the declining protein share of hunted game initiating sometime between TU2-5 and TU2-4, seemingly indicative of larger Islamisation processes at play (Figure 5.15). Unlike in TU1, however, tortoises are present throughout all TU2 contexts, with the exception of TU2-6, a 40 cm^2 test pit, though evidence for the cooking of these animals was not found following TU2-3 (Section 3.C.*II*.c). TU2-6 contained only 14.2 g of faunal material, 4% of the mean interpretative sample for each context in TU2, and was statistically nonrelevant.

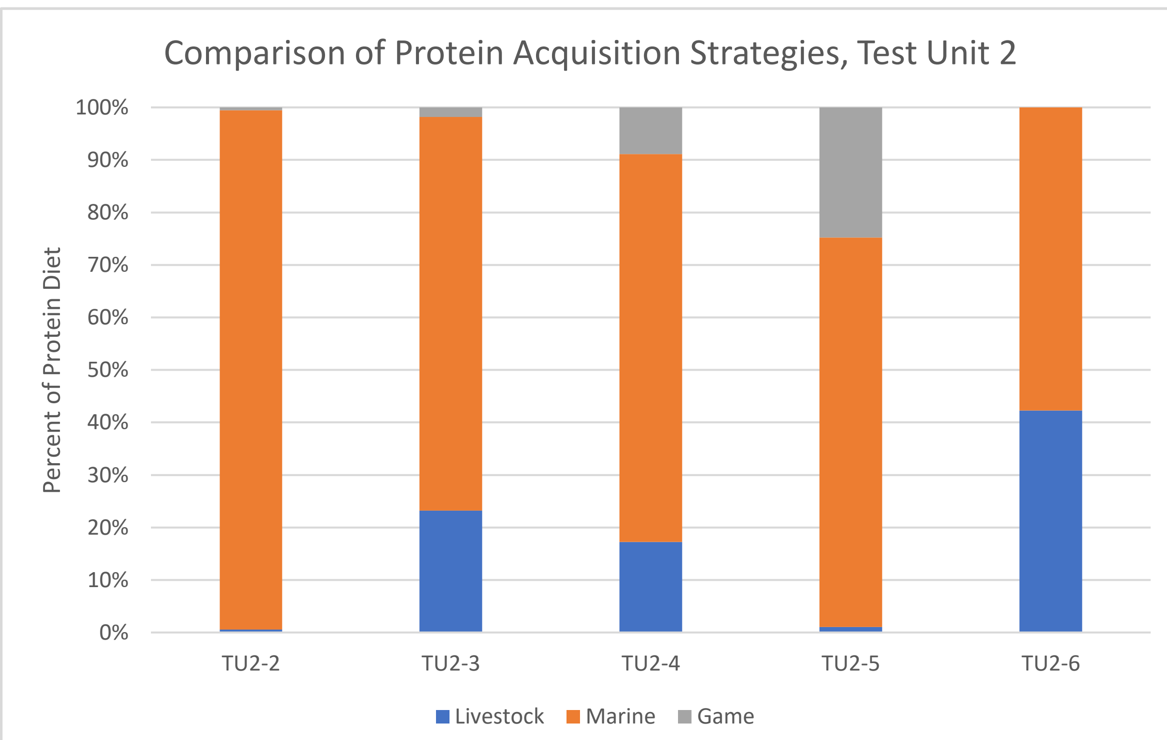


Figure 5.15: Comparison of protein acquisition strategies, TU2.

Reliance on livestock increased proportionally with suspected site usage. As bone and shell finds diminished within the space that would become the southern mosque (TU1) they increased to the south of the structure (TU2). TU2-3 represents the habitational apex of Site II, stratigraphically and typologically placed in the late 13th century, as indicated by an extraordinary increase in artefact density from previous contexts (Section 4.C.*II*.d). A drop in livestock fauna protein share, occurring between TU2-3 and TU2-2, was concurrent with a 1,350% decrease in the ceramic assemblage, with similar declines noted in all other artefact categories from the upper 40 cm of unit fill, presumably the result of an occupational shift or partial abandonment of Site II (Figure 5.15) (Section 4.C.*II*.d).

The large mammal livestock of TU2 were notably more diverse than those present elsewhere in Site II. Remains of cattle (*Bos*), domesticated goats (*Capra hircus*), and sheep (*Ovis aries*) are present from 13th century contexts through the 14th century, TU2-3, after which it appears dietary preferences shifted to favour bovines (Section 4.C.*II*.d.*ii*). The apparent shift in dietary importance of cattle visible in the test units was perhaps a result of increasing connections with the Comorian archipelago, evidence for which was identified in the ceramic record (Section 5.C), and further alignment with Mahilaka, as this transition predates the supposed Merina "taming" of the *zebu* by two centuries (Section 5.B.*I*.c.*i*) (Bloch 1985: 631; Quintana Morales and Prendergast 2017: 343).

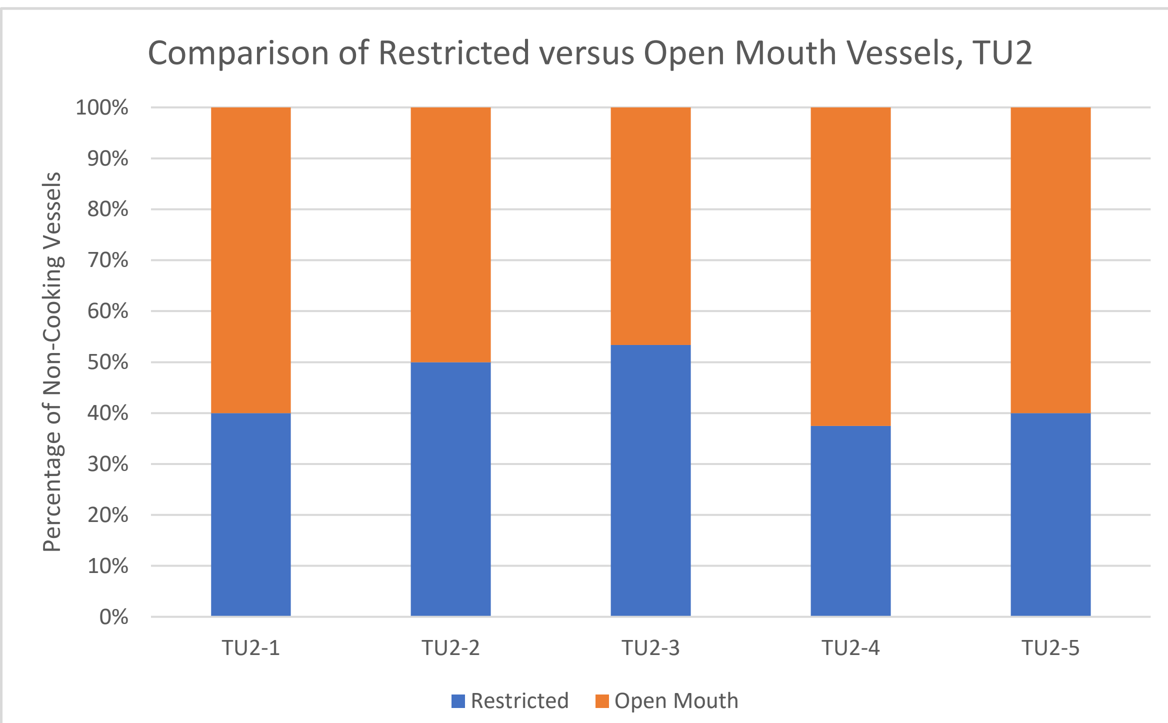


Figure 5.16: Comparison of restricted versus open mouth vessels, TU2.

The ceramic signature of TU2 reveals nearly equal utilisation of restricted and open mouth vessel forms from the earliest occupational phase until site abandonment (Figure 5.16). Open forms for non-cooking vessels were slightly favoured overall, but no clear pattern presents itself, unlike the TU1 ceramics assemblage (Section 5.B.*I*.c.*ii*.*1*). This could be a consequence of a habitational and chronological disparity between the lower strata of the two test units. Imported ceramics in the bottom-most stratum of TU2, those being Yuan Longquan celadon and Martaban stoneware, were at least a century younger than the terminal strata of TU1, C^{14} AMS dated to the 12^{th} century (Figure 3.38) (Section 3.C.*II*.b). TU1 faunal and ceramic data demonstrate that a transition indicative of dietary change began to occur in the late 12^{th} century, prior to the utilisation of the space that was investigated by TU2. Therefore, all TU2 material was deposited subsequent to the onset of Islamisation processes at Kingany, and would therefore not exhibit the same trajectory of change as seen in the older, possibly, pre-Islamic sections of Site II. When this is considered and the stratigraphic assemblages are adjusted accordingly, TU2 data would appear to correlate with that of TU1 in evidencing a partially Islamised, ocean-oriented community at Kingany who gradually came to include a number of agropastoralists beginning in the 13^{th} century.

5.B.*II*. Comparison with Contemporary Malagasy Sites

Touched upon briefly above, the archaeological assemblage of Kingany Site II shares much in common with contemporary northern Malagasy sites. Roughly 2% of artefacts in Kingany's assemblage were imported (Section 4.C.*II*), nearly identical to ratios observed at Mahilaka, and greater than those at Irodo (Pollard and Kinyera 2017: 927; Radimilahy 1998). The ceramics of Site II, especially those of the Antetikala typology, were near facsimiles of early occupational series of Mahilaka, and to a lesser degree Irodo (Section 4.C.*II*.a) (Wright, *et al.* 1996: 46). A majority of decorations present in 11^{th}-13^{th} century strata, for example dentate or arc impressions, "impressed oblique dots", and "impressed wavy line" motifs, are functionally identical between the sites (Figure 5.17) (Battistini and Vérin 1966: XXVIII; Radimilahy 1998: 148, 156, 171; Wright, *et al.* 1996: 47). Typological interrelations between Kingany and other early northern sites transcend decorative

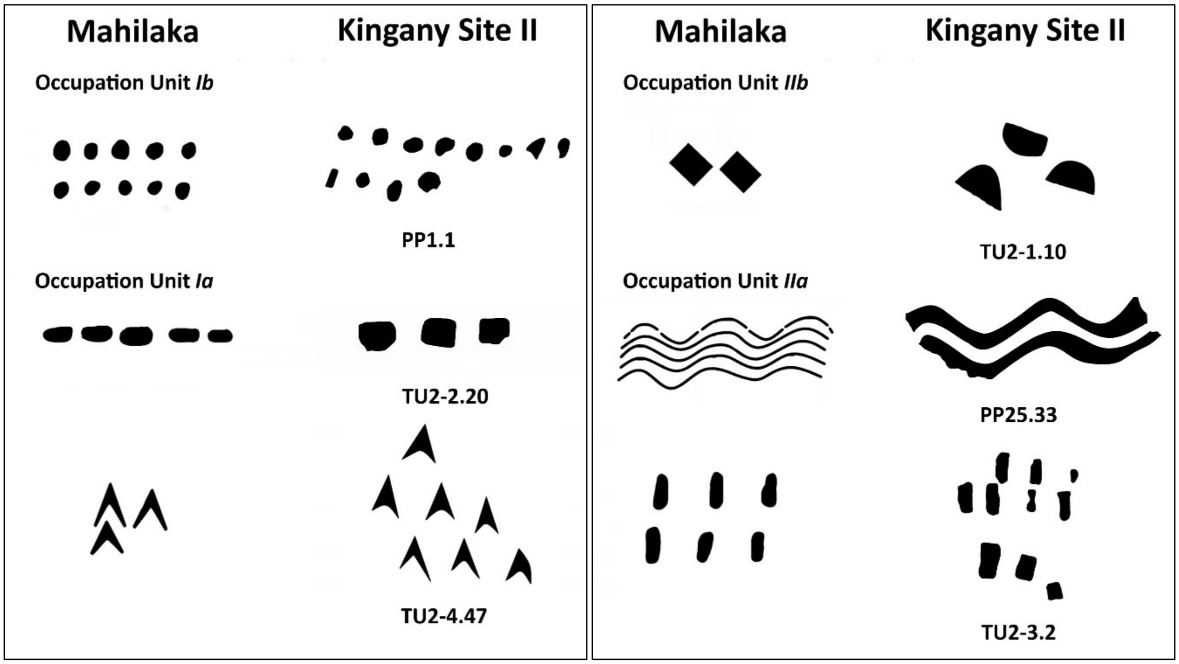


Figure 5.17: Comparison of select motifs, Mahilaka and Kingany Site II, Radimilahy 1998: 148.

motif preference and include a shared technological system for ceramic production, evidenced by the mutually coarse-grained pottery marred by irregular oxidation and reduction zones, and vessel morphological similarities, restricted "hole-mouth" jars and bowls with "interior thickening of the rims" (Wright, *et al.* 1996: 47).

While contemporary northern sites were widely engaged with the Indian Ocean world system in the opening centuries of the second millennium, evidenced in part by the presence of *sgraffiato* sherds and *R. rattus*, black rat, remains, the community at Kingany appears to have been either involved to a relatively lesser capacity or had differing trade priorities altogether, perhaps focusing instead on regional Comorian or Swahili/Kilwa complex partners (Section 5.D) (Brouat, *et al.* 2014; Dewar and Wright 1993: 434; Dewar, *et al.* 2013: 12586). Positive evidence for non-local trade at Site II actually predates stone construction at the site, with the possible exception

Figure 5.18: TU1-7.I.1 Blue-speckled ware.

of Site I Tomb 16. The earliest imported find, a "blue-speckled" sherd of probable Omani origin, was found within the 13th century layer, TU1-7 (Figures 5.17 and 5.18) (Gianni, *et al.* 2020: 2-3). Therefore, long-distance trade was occurring at Kingany in the Antetikala period, like at Mahilaka and Vohémar, the evidence for which might differ due to local agency or goods access.

Stylistic continuity was present between later phase ceramics at Site II, part of the aptly named Kingany series, and the north, but none too subtle deviation and innovation was prevalent. Kingany assemblages became dominated by triangular punctated bands, developed based on apparently local stylistic preferences, inferred from the initially constrained geographical range of the series (Dewar and Wright 1993: 449). It is possible that the conception of this style in Boeni Bay was actually an adapted take on earlier Middle Eastern ceramics, partially evinced by the proliferation of open forms within this period which included plates made as possible imitations of Persian Gulf green-glazed wares (Section 4.C.*II*.b.*i*.3) (Wright, *et al.* 1996: 51). Additionally, wavy-line negatives, produced from alternating triangular punctated bands, found throughout the 13th century and later strata at Site II (Figure 4.22), were strikingly similar to "excised triangles" and the "cut zigzag" motifs from Sharma (Figure 5.19) (Le Maguer-Gillon 2011: 175; Rougeulle 2007: 242). While the simplest forms of the triangular punctate and/or false chevron were not unfamiliar to the populations of coastal East Africa or northern Madagascar, appearing as part of Kilwa Kisiwani's Kwale ware stylistic repertoire, 3rd-5th centuries, and in the initial occupational levels of Mahilaka, early uses of the technique

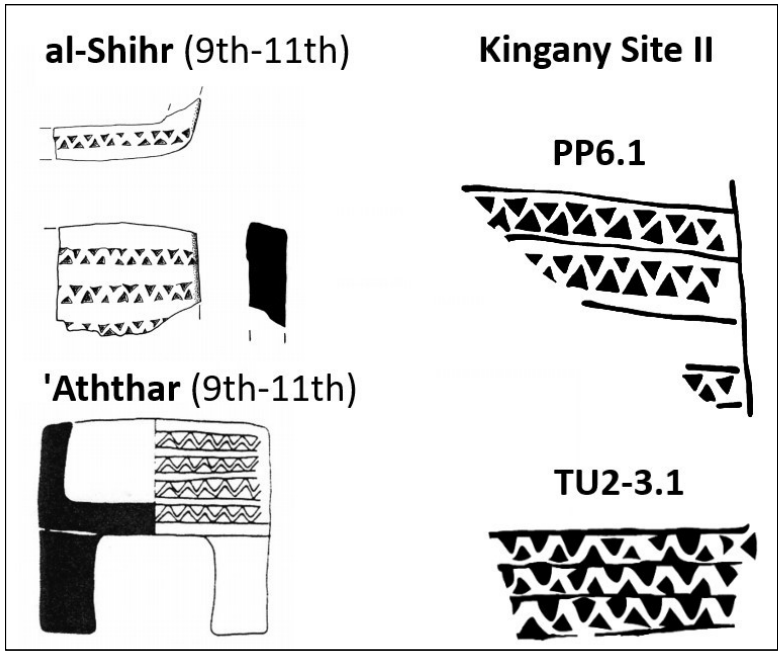


Figure 5.19: Select motifs, Yemeni sites and Kingany Site II, Le Maguer 2011: 175.

appeared in far less rigid, arguable erratic, patterns (Figure 4.59) (Kwekason 2013: 156; Radimilahy 1998: 151).

Evidence for the possible presence of Arabs/Yemenis is found in the Site II Antetikala Phase assemblage from the early 13th century, indicative of interactions between the groups, including the possibility of temporary habitation of foreign merchants at Kingany, occurring during the transitional periods that would seasonally suspend monsoon-dependent travel (Fleisher 2010b: 157-158). While rare, a number of tagine-style lids and possible colonoware incense burners might attest to such temporary stays (Sections 4.C.*II*.b.*i.1* and 4.C.*II*.b.*i.2*) (Vérin 1975a: 313). It could be the case that the sharp deviation in ceramic motif prevalence from linear incisions and oval impressions to organised triangular punctates, first appearing at Kingany, was a result of frequent interactions between Arab and Malagasy groups, which incidentally happened to coincide with the erection of the southern mosque at Kingany (Radimilahy 1998: 148). By the 15th century triangular punctate designs innovated at Kingany would become more widespread in Madagascar (Dewar and Wright 1993: 449).

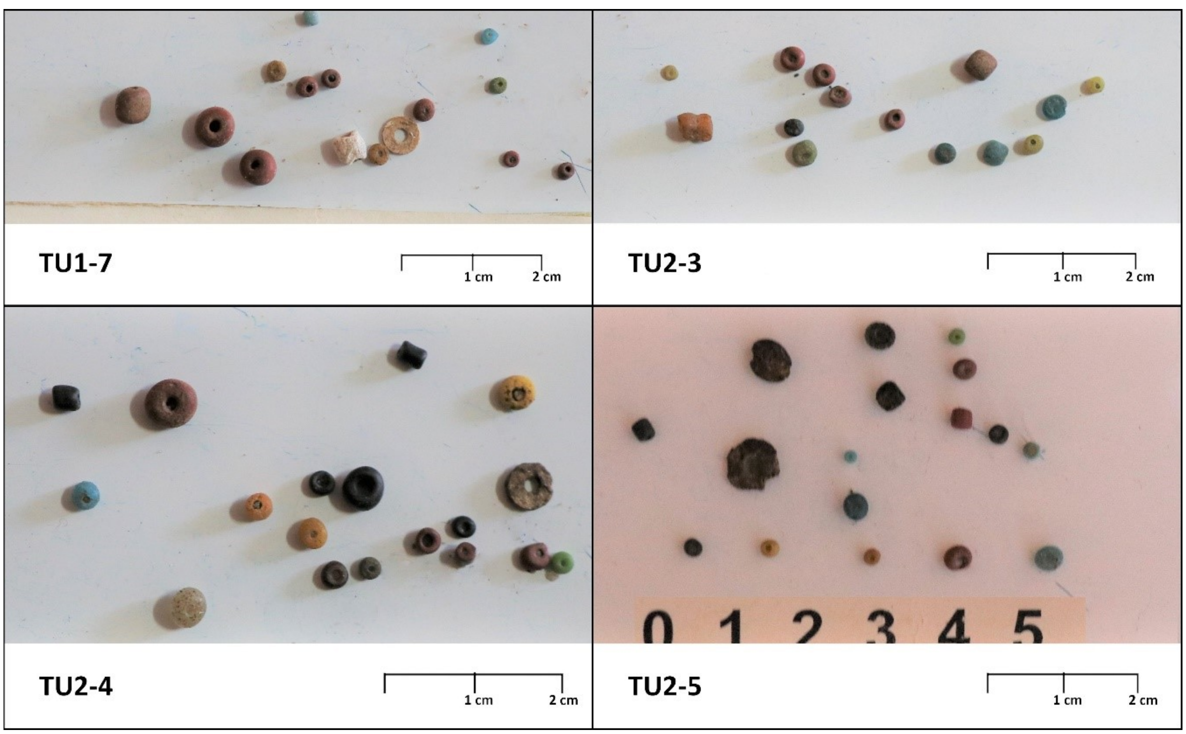


Figure 5.20: Various beads from Kingany Site II.

Trade connections reconstructed from goods at Site II, e.g. chlorite schist vessels, Indo-Pacific glass beads (Figure 5.20), Longquan Celadons and Persian Gulf wares, are again consistent with those of the island’s northern ports, but are also comparable with some early southern “*manda*”, stone-walled villages, like 12th century Andranosoa (Radimilahy 2013: 5; Radimilahy and Crossland 2015: 505). Despite undeniably strong typological connections with the earliest occupational phases at these sites, and a chronology based on three secure radiocarbon dates, the absence of *sgraffiato* at Kingany has led previous archaeologist to assume a 14th century date for the settlement (Vérin 1986: 165). A 14th century origin for Kingany does not at all fit the data from the 2019 campaign. The interpretive disconnect between Vérin’s study and those within this thesis is a result of testing bias. Previous excavations at Kingany examined monumental residential structures, features with few known contemporary analogues, which likely post-dated the 13th century southern mosque, and were, ultimately, not reflective of the site at large (Beaujard 2019b: 374; Vérin 1986: 161-163). The present study sought to investigate public areas, the southern mosque and “open spaces”, as well as vegetal dwellings, presumably occupying perceived architectural gaps in the site, resulting in a comparatively more complete picture of life at Kingany. This research methodology allowed for tighter parallels to be drawn with Mahilaka than previous studies.

Dietary preferences of 12th-13th century strata at Kingany, prior to the construction of the southern mosque, mirror those of Occupation Unit *Ia* at Mahilaka, with both populations composed of universalists and fisherfolk who also exploited *ḥarām* game such as giant tortoise and tenrec (Section 5.B.*I*.c) (Boivin, *et al.* 2013: 241; Radimilahy 1998: 196; 2013: 5). Universalist, in this context, refers to those subsistence strategies which saw roughly equal occurrence of animal husbandry and hunting with heavy marine exploitation. Both sites saw a transition from universalist strategies, evidenced by a decreasing relative prevalence of game fauna in their assemblages, in favour of agropastoralism during periods of Islamisation, materially demarcated by the construction of mosques (Radimilahy 1998: 196). The regional repetition of this pattern, now confirmedly present at two northwestern entrepôts, might actually shed light on the Islamisation processes at play along the northwestern Malagasy coast.

Following roughly comparable trajectories to those of popular theories for the peopling of the island, archaeological models argue that Islam arrived in Madagascar's northwest via Muslim merchants and potentially recently Islamised Nzwani intermediaries hailing from Sima or Domoni around the 11th century (Radimilahy and Crossland 2015: 502-504; Wright 1992: 88, 92). The coast-dwelling

Malagasy communities of this period, like their iron-using mainland cousins at Chibuene and Sofala, engaged in small-scale nodal trading of raw materials and specialist products, e.g. worked chlorite schist and iron, the more valuable of which attracted attention from far afield (Radimilahy and Crossland 2015: 502-505). Centuries of semi-regular interaction with long-distance traders and migration by Austronesian and Bantu-speaking peoples impacted the northern Malagasy socio-culturally, in a manner resembling the neighbouring Swahili Coast (Dewar 2014). Settlement-patterning island-wide reveal a tangible hesitance to move outside of protected islets or coastally accessible estuaries prior to the second millennium, a testament to the ocean's essential functions to early Malagasy lifeways (Radimilahy and Crossland 2015: 504-505). However, interactions with the ocean were not static throughout this period. Cultural reorientations at the turn of the millennium saw the conglomeration of coastal villages/communities into ocean-facing ports with ancillary island fastnesses and the subsequent decline of universalist strategies at said towns, the partial observance of *ḥalāl* and pan-Indian Ocean foodways seen in both ceramic and faunal remains, construction in coral, and the embrace of Islam (Fleisher, *et al.* 2015: 102; Radimilahy and Crossland 2015: 504). Regional confederation and sedentary transitions might have been purposeful attempts by Malagasy groups to better engage with traders and solidify command over local wealth, as indicated by Mahilaka and Vohémar's coastal placement at natural resource rich outlets (Radimilahy 2017: 289; Serneels, *et al.* 2018: 111). The appearance of urban ports in the west, and potentially fortified settlements in the far south, conversely, do not appear to be the result of slow "cultural evolution and development" but were imported lifeways brought by settlers "already accustomed to fishing, farming, herding, forging iron, and the life of the city" (Dewar 2014: 52). The frequency of convergences between the Malagasy northwest and coastal East Africa, e.g. Kilwa

Figures 5.21 and 5.22: Top: Fortress wall at Mahilaka**; Bottom:** Kingany southern mosque east entrance.

and Shanga, does not seem to be coincidental and must evince some population overlap and interplay between opposing sides of the Mozambique Channel.

The architecture of Madagascar in the early-second millennium was not homogenous, likely as a result of the phased and variable peopling of the island. Covering approximately 18 hectares, Kingany was similar in size to the villages of the Androy region and surely housed a smaller population than the 70-hectare Mahilaka (Parker Pearson, *et al.* 2010: 124). The standing structures at Kingany were generally rectangular, built of rough cobbles and blocks bonded by lime mortar in a similar manner to the 13th century architectural tradition of the coastal East African Swahili cultural complex and later Malagasy sites of Langany and Antsoheribory (Pradines 2012: 139). This is entirely unlike the "*manda*" villages of south Madagascar or the intentionally shaped and planar stoned, dry-coursed, *riba* fortress at Mahilaka and other approximate contemporaries (Figures 5.21 and 5.22) (Parker Pearson, *et al.* F2010: 124-125; Radimilahy 1998: 37). Architectural parallels between Kingany and Swahili sites extend beyond topical aesthetic likeness and include exact dimensions of measurements utilised for the construction, in this case a standarised *dhirāʿ*, or cubit, not unlike that used at Shanga and Kilwa Kisiwani (Section 3.C.*I*.b). This shared technological tradition also resonates in the general Shirazi-style plan of both mosques at Kingany, the pillar tomb in Site III, and the relative spatial organisation of the site at large (Section 5.D.*II*) (Ghaidan 1975: 25; Pradines 2012: 141). Though it is important to reiterate that a majority of buildings in coastal East African sites of the period would have been constructed of other more impermanent materials, residue for which is decidedly more ephemeral, which complicates comparative study (Baumanova and Smejda 2018: 82).

Oral tradition in Boeni Bay holds that Nosy Makamby was settled first by Comorian refugees from the mythical island of Mojomby (Vérin 1986: 157). Roughly a generation later, this group founded Kingany, at which point it would appear that Makamby functioned as an ancillary outpost to larger regional towns (Vérin 1986: 157). Nosy Makamby Sites II and III (Section 2.E.*III*.b) contain walled, rectangular tombs architecturally akin to those found at Kingany, but the former were accented with *porites* coral and oriented 90˚ perpendicular to the *qibla* (Vérin 1986: 160-161). Kingany Site I Tomb 16, the only non-*qibla* aligned burial at the site, is nearly identical in construction and orientation to Nosy Makamby's tombs (Section 5.B.*I*.b). Based on the sequence recorded for Kingany, Site I Tomb 16 could have belonged to a pre-Islamic phase, as early as the 12th century, and was consequently older than structures matching the alignment of one of the two mosques. Unfortunately, this chronology is predicated on comparative analysis of the superstructure, which is not guaranteed to have been built immediately following the interment of the deceased, and is thus tentative.

Kingany both resembles and differs from contemporary northern Malagasy sites. Observed variation in material frequency, dietary schemes, and architectural tradition might correspond with regionally distinct population groups. Initial consumption strategies at Kingany mirror those of early occupation at Mahilaka, suggestive of a shared proto-urban population. Responses to Islamisation processes, manifest in part as differing fauna exploitation overtime, were likewise comparable. However, the ceramic assemblage of Kingany Site II (Section 4.C.*II*.d.*i*) and the architectural tradition of the site were undoubtedly inspired by the Swahili cultural complex of the 13th century and later, if not actually a distanced component of it.

5.B.*III*. Islamisation of Boeni Bay

The mosques of Site II (Section 5.B.*I*.a), the dozens of associated, *qibla*-oriented tombs and intricate Arabic plaques (Section 5.B.*I*.b) were the strongest evidence for the presence of Islam at Kingany, while gradual Islamisation was displayed through subtle changes in diet from the earliest to the later occupation phases (Section 5.B.*I*.c). It is apparent from the late appearance of a mosque, built at least 200 years after people arrived in the locale, and from the chronologically sorted artefactual data that the foundational populations were not completely displaced, but instead experienced a gradual proliferation of Islam through the conversion of some individuals, and migration events from the Malagasy north, Swahili East Africa, the Comorian Archipelago, and potentially Yemen. Distributional patterns evidenced by the sondages convey numerous geo-locally distinct animal acquisition strategies employed concurrently, some of which were inconsistent with general Islamic practice, as in the consumption of *ḥarām* species (Section 5.B.*I*.c.*i*), that might evidence multiple discrete groups. Exploitation, or lack thereof, of certain species could be related to early versions of Malagasy cultural prohibitions, known as *fady*, but, as these social taboos fluctuate regionally and through time, they are virtually unidentifiable in the absence of historical documentation (Griffin 2009: 72). The potential of an occupationally diverse, but otherwise ethno-culturally homogenous town is not implausible, but the compositionally distinct artefact clusters observed at the site favour a hypothesis featuring population heterogeneity (Section 5.B.*I*.c.*i*). Historical accounts detailing contemporary regional sites of Sofala and Vohémar, contained within al-Idrīsī's *Nuzhat al-mushtāq fī ikhtirāq al-āfāq* and a quote from Ibn Fāṭima recorded by Ibn Saʿīd, describe ports frequented by many ships from "all countries" (Beaujard 2019b: 380-381; Jaubert 1836: 65-67; Shepherd 1982; Wood, Dussubieux, and Robertshaw 2012: 72). Therefore, given that the material assemblage displays habitual Indian Ocean mercantile engagement, a sophisticated and well embedded Islamic belief (Section 5.B.*I*.b.*i*), and historically attested worldly neighbours, it is not unreasonable to suspect that Kingany was a similarly cosmopolitan port, perhaps even the "sizeable trading settlement" of Anāmil from Aḥmad ibn Mājid's *Ḥāwiya*, (Viré and Hébert 1987: 76). The archaeological data at Site II evidences the presence of Islamised peoples, possibly of both local and foreign origins, cohabitated with other groups, not all of whom shared wholly in so-called Muslim lifeways.

The apparent gradual shift away from terrestrial game hunting at Kingany might provide a clue to which groups were actively Islamising prior to the arrival of any Muslim migrants. Albeit from a small sample, the test unit assemblages show a waning of game hunting with a converse waxing of agropastoralism beginning in the 13th century (TU1-6/TU2-4) (Figure 5.23). This corresponds directly with the construction of the southern mosque, a point in which the population would have theoretically been undergoing some process of Islamisation. The species appearing as game animals, while diverse, include traditional Comorian/Malagasy staples, i.e. tenrec and giant tortoise (Dewar, *et al.* 2013: 12587; Radimilahy 1998: 196). Tortoise remains made up on average 36.4% of bone finds in the units which they were present (Section 4.C.*II*). Artefact signatures of pits with greater than average prevalence of tortoise remains, those being PP16 and PP23, TU1-7 and TU1-8, and

TU2-5, belong to either pre-Islamic levels or a demonstrably Malagasy area of the site, with but one exception, PP23 (Section 5.B.*I*.c). PP16, being only 36 cm deep, clearly shows that some groups within Site II consumed tortoise following the spread of Islam at Kingany (Section 3.C.*II*.a). This does not appear to have been the case site wide. TU1-7, TU1-8, and TU2-5 belong to the 12th-13th century Antetikala Phase strata that predate the southern mosque. Tortoise remains decline from a high of greater than 60% in these contexts to just 6% of bone remains by the occupational peak of Site II, TU2-3. It is evident that the arrival and propagation of Islam at Kingany impacted lifeways at the site, specifically those most commonly practised by the foundational population, namely the universalists.

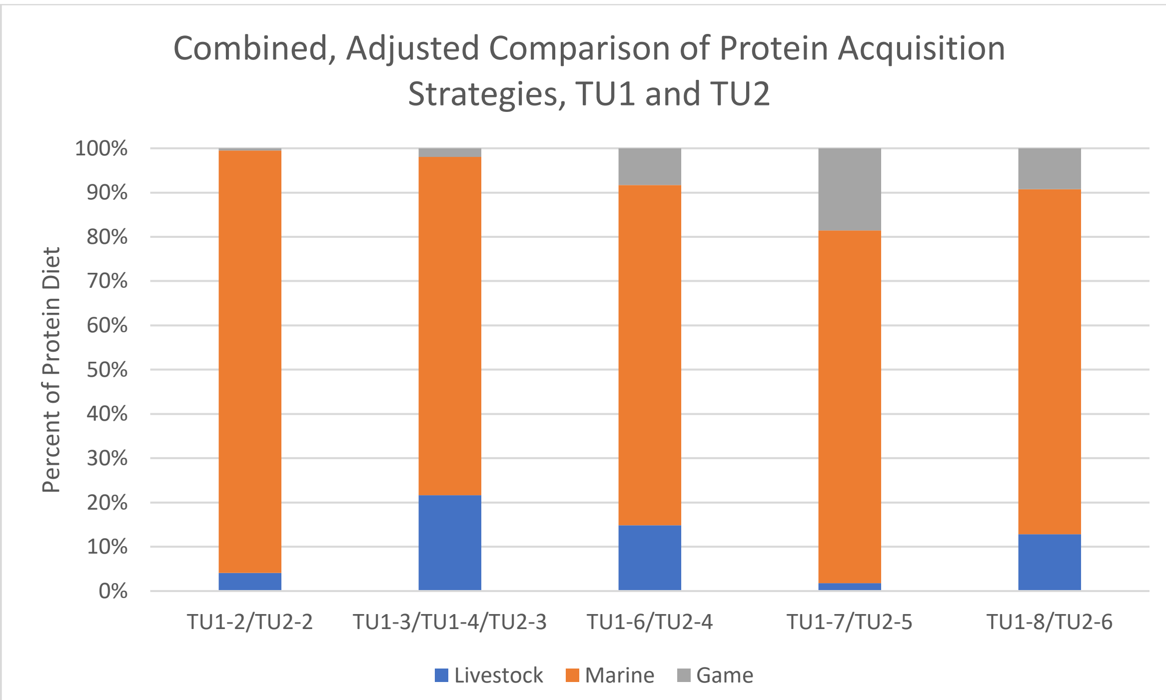


Figure 5.23: Combined, adjusted comparison of protein acquisition strategies, TU1 and TU2.

The decline of universalist groups was observable as a sharply diminished site-share/material visibility in the centuries approaching the construction of the southern mosque (Figure 5.23). If Malagasy oral tradition is to be interpreted as literal, the foundational population at Site II could not have been the first settlers, or the Vazimba of legend, as the residents of Kingany consumed cattle, something the former reportedly never did (Bloch 1985: 642; Vérin 1986: 157). Additionally, this population, having arrived on the edge of Boeni Bay by at least the 11th century, predated the supposed Zafiraminia, Zanzibari immigrants, and Antalaotra migrations by multiple centuries (Randrianja and Ellis 2009: 62-63). Regardless, the early Kingany universalists must have belonged to the "second phase" of migration to Madagascar, those being the Austronesians and iron-using Bantu speakers (Radimilahy and Crossland 2015: 503; Randrianja and Ellis 2009). These universalists produced pottery of similar shape and decoration to that of Mahilaka and maintained comparable cross-island trade with the northeast for chlorite schist and other commodities, strongly recommending more than just a superficial connection between Boeni and Ampasindava bays (Section 4.C.*II*). It is highly probable that the foundational, Antetikala Phase population at Kingany were from Mahilaka, or its immediate hinterland. These early universalist, Malagasy settlers might have had some previous experience with Islam as a result, but had not yet permitted the faith to entirely supersede indigenous practices.

The first community of Boeni Bay, *circa* 11th century, was at most only partially Islamised. Archaeological materials from beneath the oldest stone mosque at the site were not indicative of previous structural stages or wooden precursors, as seen at Shanga or Sima, but instead represent a domestic/workshop space (Section 5.B.*I*.a) (Horton 1996_b; Wright 1992: 88, 92). Dietary data from this early period, including bone, shell, and ceramic assemblages, does not evidence a fully Islamic settlement either, though the interpretation of such material is admittedly less absolute in its clarity due to variance in Islamic practice. Nevertheless, the 13th century construction of the southern mosque, deduced from the radiocarbon dating of charcoal found immediately beneath the structural foundation in TU1-7, functions as a confidently chronologically grounded keystone point by which to interpret other datasets (Section 3.C.*II*.b). Islamisation processes would have needed to occur prior to the 13th century to have prompted the sizeable community investment that was the southern mosque. Material changes, visible in the strata leading up to this period, were indicative of transitions in dietary preferences, e.g. sharp decrease in the consumption of *ḥarām* species, e.g. dugong, tenrec, and tortoise (Figure 5.23), and a gradual transition of ceramic forms from an equally restricted and open series to non-restricted shapes that could facilitate communal dining (Figures 4.60 and 5.14) (Section 5.B.*I*.c.*ii.1*). As these cultural changes manifested, the prevalence of the universalist lifeway dwindled, but did not vanish, in favour of the agropastoralist strategy. These changes fit general models of Islamisation and socio-cultural "Arabisation" in some parts of the Swahili Coast, i.e. Kilwa, Lamu, and Zanzibar (Pawlowicz 2013: 393; Walshaw 2010: 151). The growing importance of Islam and the observance of some *ḥalāl* foodways could be the result of local shifts in socio-religious preferences or contact between Boeni Bay merchants with the rapidly Islamising Swahili or even Yemeni Arabs (Horton, Fleisher, and Wynne-Jones 2017: 164).

Only a single piece of potential Kilwa-style "Wealed Ware" was found at Site II, PP7.1 (Section 4.C.*II*.b.*i.1*). However, sizeable unworked pieces of giant fluted clam were recovered from both test units, in strata dating to the 13th century or earlier (Sections 4.C.*II*.c.*iv* and 4.C.*II*.d.*iv*). No worked or cooked giant clam specimens were identified at Site II, so it is doubtful that the local population was directly utilising the shell. However, giant clam shell was being processed into aragonite in the Kilwa Archipelago (Wynne-Jones and Fleisher 2016: 129). It is plausible that Kingany acted as a raw material supplier for this industry, though chemical analysis of Kilwa Kisiwani and Kingany samples will need to occur to be absolutely certain. However, as the sites were contemporary, participated in shared mercantile networks, evidenced by PP7.1, and were mutually reachable in a single monsoon season, it is probable that inter-site trade took place (Beaujard 2019$_b$: 381). Socio-cultural exchange would have undeniably been a byproduct of this, possibly visible in the coastal East African-inspired architecture and burials at Kingany, to be further explored in Section 5.D.

Ibn al-Mujāwir recorded in his 13th century work *Tārīkh al-mustabṣir* that sailors from *al-Qumr*, possibly Austronesian Malagasies (Section 1.D.*I*), managed to shorten the typically multi-year journey between *Qumr* and Aden to just one monsoon season, a technological know-how that both enabled trade and facilitated unpredictable coastal raiding (Beaujard 2019$_b$: 381-382; Smith 2008: 138; Wood, Dussubieux, and Robertshaw 2012: 72). While the speed of travel implied is somewhat fantastical, Ibn al-Mujāwir's account of direct interaction between the two groups is supported by al-Dimashqī's description of *roc* feather trade from *Qumr* to Aden a century later (Beaujard 2019$_b$: 382; Smith 2008: 137-138). Archaeological evidence from Kingany reveals that this mercantile stream was not unidirectional. The fine Arabic inscriptions found on Site I Tomb 12 and Site II Tomb 8 evidence vernacularisation of, or at least social familiarity with, a non-Bantu/Austronesian language, displaying culturally embedded Islam, framed by transoceanic symbolism, on a regionally important material, *porites* coral, in 13th-14th century northwest Madagascar (Section 5.B.*I*.b.*i*). This degree of acculturation would not have occurred overnight, save for in instances of migration, the occurrence of which cannot be ruled out for Kingany. Sixteen percent (3) of all imported ceramics at Site II are potentially from the Hadhramaut (Section 4.C.*II*.b.*i*.*3*), and a locally produced piece, PP6.1 (Figure 4.14), seems to be a local imitation or colonoware, incense burner made in a Yemeni style (Le Maguer-Gillon 2011: 175). Collated, this evidence indicates a substantive connection between Yemenis and Kingany, not limited to visitation by the former.

The emergence of monumental stone tombs oriented exactly to the *qibla* wall of the southern mosque evidence the adoption or expansion of Islamic burial traditions in this period as well (Section 5.B.*I*.b). A single non-conforming tomb, Site I Tomb 16, was in an advanced state of disrepair relative to other nearby structures during the 2019 season and was set 90˚ to the *qibla*-oriented Tomb 15 which superimposed a wall of the former's (Section 3.C.*I*.b). Observations made during the survey would suggest that Tomb 16 is older than any other burial at Kingany, potentially belonging to the 12th century. It is feasible that Tomb 16 is an early effort to follow emerging Muslim coastal East African and Comorian traditions, like at Acoua (Section 2.D.*II*.a), but through a local, non-Islamic lens, hence the lack of *qibla* orientation (Fischbach, *et al.* 2016: 84; Pauly 2017: 30). The architecture of the tomb necessitates a degree of familiarity with Swahili graves, perhaps as a result of trade or travel. It is unlikely that the Site I Tomb 16 is the product of strictly local convergent stylistic evolution. The tomb is largely dissimilar to earlier Mozambique Channel burials, such as the few Comorian Dembeni phase examples, namely Nyamawi (Section 2.D.*II*.c), the unmarked graves of Chibuene, and other structures of that period in northern Madagascar, like the basalt slab topped graves at Benavony (Serneels, *et al.* 2018: 115; Sinclair 1987: 87; Wright 2017a: 274). Interestingly, the tradition seen at Benavony is outwardly reminiscent of present-day

Sakalava internment practice at Morafeno. Sakalava individuals in Boeni Bay are buried in wooden coffins in a supine position topped by an approximately 50 cm tall concrete or stone rectangular slab superstructure (Dezy *pers. comm.* 20 May 2019). Muslim Sakalava can be buried on their right side if they so desire (Dezy *pers. comm.* 20 May 2019). In contrast, Tomb 16's rectangular enclosure of coralline limestone is a style more architecturally connected to early-second millennium Swahili practice, despite its orientation.

Figure 5.24: View of Morafeno, Madagascar.

Stratigraphic thicknesses and associated artefactual densities provide a relative gauge by which to interpret habitational duration. The height of occupation at Site II, represented in the archaeological sequence by TU2 Strata D and C, lasted for an amount of time comparable to that of its subsequent decline (Section 3.C.*II*.c). This duration was perhaps as brief as two centuries. The data suggests a gradual waning of occupation at Site II beginning in the mid-14th century and not necessarily the overnight abandonment prompted by Admiral de Cunha's May 1506 raid recommended by Vérin and oral tradition (Vérin 1986: 171-172). The present-day inhabitants of the area, primarily residing in Morafeno (Figure 5.24), arrived only three generations ago according to an elder by the name of Dezy (Section 3.A.*I*.b). The archaeological record at Site II appears to support this claim as an habitation gap of at least 400 years was visible. Therefore, the current Islam practised by the inhabitants of Morafeno, described simply as *ṭawḥīd*, or the "affirmation of the oneness of God", by town residents, is likely not a continuation of what was observed at Kingany (Dezy *pers. comm.* 21 May 2019).

5.C. Boeni Bay and the Comoros. Comparative Perspectives

Oral traditions closely link coastal Madagascar with the Comorian Archipelago (Radimilahy and Crossland 2015: 503; Wright 1992: 83; Wright, *et al.* 1996: 40). While some narratives claim that various Muslim groups of the western littoral came from a mythical lost island in the archipelago, recent research into Austronesian gene flow has confidently reconstructed population trajectories which not only appear, but linger in the Comoros in the first millennium (Beaujard 2019$_b$: 393; Brucato, *et al.* 2018). Additionally, archaeological evidence, including reconstruction of flora/fauna translocations, from the earliest Malagasy sites recommend a mainland African presence on Madagascar, arriving via the Comorian Archipelago, centuries before the Austronesian migration, though it is debated whether or not these settlements were permanent (Boivin, *et al.* 2013: 255). These population movements are reflected in the historical tradition, collated from earlier oral accounts, of some of the islands. For example, the chronicles of Ngazidja tie their lineages to those of Swahili/Shirazi patrician families, such as from the royal line of Tungi (Rotter 1976: 24). However, such connections have been interpreted as purposeful prestige-building and dynastic-legitimising manipulation of histories by stakeholding historiographers (Pawlowicz and LaViolette 2013: 120-121; Wright 1992: 126). Additionally, data from effectively all available routes of investigation show that it was not just African Muslims who traveled through and inhabited the islands. For this thesis, those Islamised families who would eventually arrive in Madagascar, their legacy preserved in the archaeological records of Kingany, Mahilaka, Nosy Manja, Vohémar, and elsewhere, are of the most interest. That said, absolute statements regarding the exact chronologies of African versus Austronesian arrival will be avoided in this thesis as research into the peopling of the Comorian Archipelago and Madagascar is ongoing and theories produced in response are dynamic (Dewar and Richard 2012).

5.C.*I.* Connections

Historical and oral accounts document continuous interaction between the Comorian Archipelago and Madagascar (Alpers 2001; Newitt 1983: 142-144). Tradition in Boeni Bay, specifically that of Kajemby and Antalaotra groups, as recorded by Vérin (1975_a), state that the western coast was settled by Comorian, specifically Mojomby, refugees, a narrative shared by some groups in Mayotte (Beaujard 2019_b: 393). While flight from Mojomby, which sank as punishment for the sins of its people, fits leitmotifs of “lost island” or disappearing homeland narrative framing devices and is a metaphor for Mozambique according to some (Kent 1970: 174), linguistic, genetic, and archaeological data corroborates the general direction of population movement implied (Beaujard 2019_b: 393; Vérin 1981).

Potential archaeological indicators of Comorian contact with late-first/early-second millennium northern Madagascar locales have been discussed for decades (Wright 2017_a: 273-274; 2017_b: 282). Ceramic typological, specifically morphological, decorative, and technological, equivalency is perhaps the most utilised line of inquiry in this matter. Globular “hole-mouth” jars, present in the Comorian Dembeni, 8^{th}-10^{th} centuries, and Hanyundru series, 11^{th}-13^{th} centuries, and coetaneous Swahili coastal assemblages, were also a key component of the Antetikala and Kingany phase ceramics (Section 4.C.*II*) (Horton and Chami 2017: 143; Wright, *et al*. 1984: 25; Wright, *et al.* 1996: 46, 51). Morphologically similar pottery also appeared in the Sandrakatsy typology, 8^{th}-12^{th} century Antongila Bay, characterised as being thick-walled, inclusion-filled, low-fired earthenwares, deep basined vessels and “hole-mouth” spherical jars (Dewar and Wright 1993: 430, 437). Furthermore, bowls homologous to those recovered at Sandrakatsy were identified within the earlier occupational contexts of both Mahilaka and Irodo (Dewar and Wright 1993: 437).

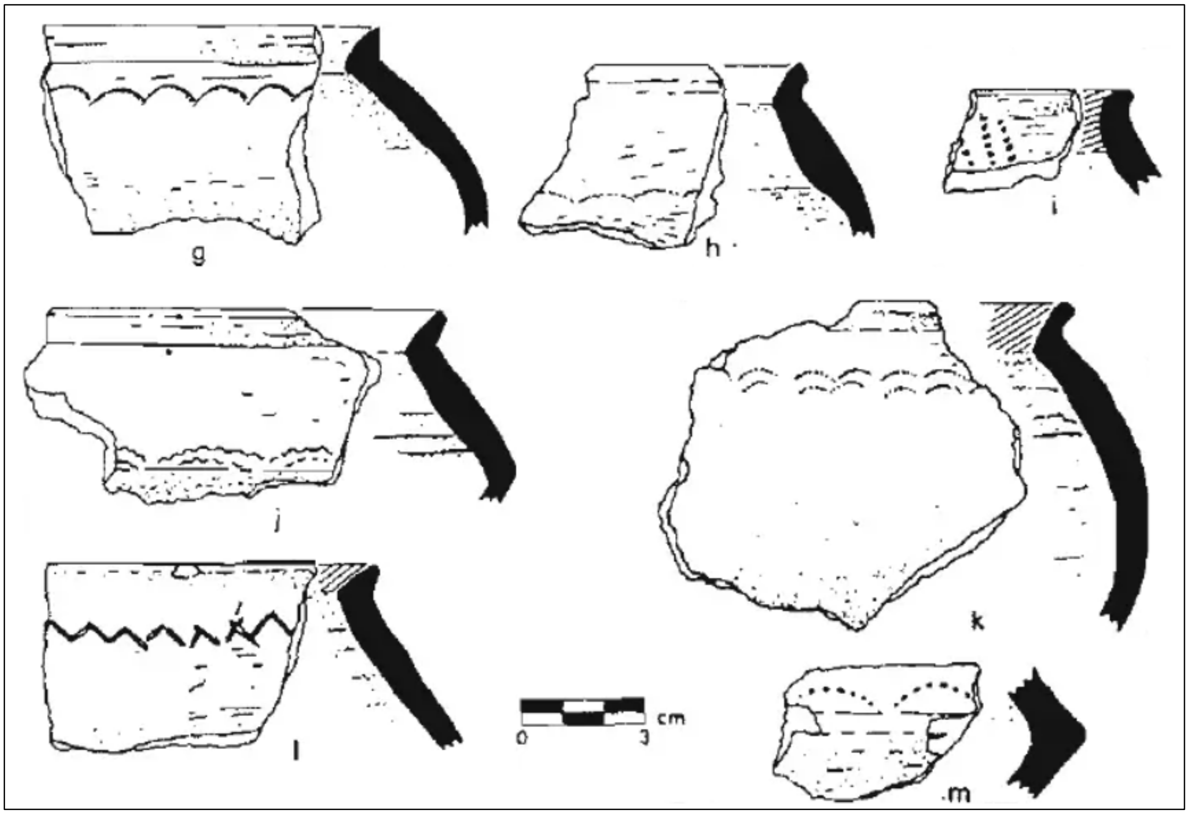


Figure 5.25: Examples of Dembeni Phase pottery with “dentate” impressions, Wright, *et al.* 1984: 28.

Perhaps the most invoked characteristic of Comorian ceramic design is the repeating dentate motif, rarely found in mainland East Africa (Figure 5.25) (Horton and Chami 2017: 143). This motif, also known as arc impression, was possibly the result of pressing a shell edge-on into wet clay and first appeared at Comorian Dembeni phase sites (Andrianaivoarivony 2011: 343; Horton and Chami 2017: 142). Examples have been found in 9th century strata at Manda and Shanga, but also *circa* 13th century contexts at Kingany Site II and Mahilaka (Horton and Chami 2017: 142; Radimilahy 1998: 158; 2017: 289). Kingany examples, while limited, came from both a sondage, PP24.11, and a test unit, TU2-3.70 (Section 4.C.*II*). Additionally, rectangular punctated sherds at Site II, all of which came from the same context, TU2-3.2, TU2-3.52, TU2-3.58, possessed a motif characteristic of the Comorian Hanyundru phase (Section 4.C.*II*.d.*i*) (Wright 2017b: 279). Notably, all sherds with Comorian-style motifs at Site II were locally produced and came from two excavations adjacent to the southern Mosque and only 5.27 m apart (Figure 3.28). Red slipped pottery, prevalent in Comorian ceramic traditions from the Dembeni

Phase to the present day, were well represented in the Kingany assemblage with 84 sherds identified in the diagnostic assemblage (approximately 15%) (Wright, *et al.* 1984: 25-26). It is plausible that these ceramics evince cultural transmission or migration between the locales.

Overt affirmation for centuries of direct trade between these islands prior to the historical period largely manifests as worked chlorite schist and rock crystal finds in the Comoros (Wright 2017b: 282). Raw material sources for both of these commodities are located hundreds of kilometres away in northeastern and central-northern Madagascar, but the goods, worked or otherwise, were shipped to world markets from coastal entrepôts (Nitsche, *et al.* 2018; Pradines 2013: 67). Imported ceramics, beads, and glass from further afield, the principal surviving components of inbound trade, likely arriving in Madagascar via early-second millennium Comorian merchants, are functional, but less concrete markers of contact. The scope of these exchanges, which appear as early as the 10th century at northern sites such as Benavony, Nosy Mangabe, and the cave shelter of Lakaton'i Anja, were almost certainly small-scale and infrequent (Section 2.E.*II*.a) (Dewar, *et al.* 2013: 12586; Serneels, *et al.* 2018: 133). All of these sites were located within relatively close proximity of exploitable chlorite schist outcrops and riverine systems rich in rock crystal (Horton, *et al.* 2017: 110; Pradines 2013: 67). Chlorite schist objects appear to have been culturally valuable even in this early period. Vessels were repaired, much like imported ceramics in Swahili contexts, manufacturing debris was reused in pottery production, and some vessels might have served ritual functions, so it cannot be assumed that the positioning of these sites was strictly entrepreneurial (Schreurs, *et al.* 2011: 16; Serneels, *et al.* 2018: 133-136, 153). However, given that their artefactual assemblages included long-distance goods, it is unlikely these settlements simply fulfilled local demand. The uniformity of Indian Ocean trade goods found in 10th century archaeological contexts, those being Middle Eastern opaque and turquoise glazed wares, Song Dynasty clear-glazed porcelains, and glass beads, black wound and red drawn variants, at northern coastal Malagasy sites and Comorian contemporaries, namely Sima and Domoni, highlight the network access allotted transshipment nodes in this period (Section 2.D.*II*.b) (Dewar and Wright 1993: 431; Dewar, *et al.* 2013: 12586; Wright 1992).

Transmission histories of flora and fauna between the islands of the Mozambique Channel has more recently become a subject of interest. A number of species endemic to northwestern Madagascar, namely *Tenrec ecaudatus* (Tailless tenrec), *E. fulvus* and *E. mongoz* (Common brown and Mongoose lemurs), *Geochelone yniphora* (Ploughshare tortoise), and *Erymnochelys madagascariensis* (Madagascan big-headed turtle) have been found in Comorian contexts dating to the 9th century (Boivin, *et al.* 2013: 241). Tortoise and tenrec species were constituent to universalist dietary strategies at Kingany Site II and Mahilaka in the earliest occupational strata, likely reflecting wider forager habits in northern Madagascar (Section 5.B.*I*.c). It does, however, appear that the Comorian communities embraced caprine and bovine based agropastoralism at a time when hunter-gathering was still largely practised in northern Madagascar (Quintana Morales and Prendergast 2017: 340-343). At Kingany Site II, caprines and cattle surpass game fauna in 13th-14th century strata, e.g. TU2-3 and TU2-4, a period in time which corresponds with the appearance of Comorian-style motifs and irrefutable evidence for Islam, the southern mosque, at the site (Sections 4.C.*II* and 5.B.*I*).

The harmonisation between the material sequences of northern Madagascar and the Comorian Archipelago, especially the islands of Nzwani and Mayotte, confidently reaffirms the historically attested intra-regional connections that existed for centuries before, during, and after the habitation of Kingany and the Boeni Bay.

5.C.*II*. Comparing Islamisation Chronologies

Archaeological data indicates that Islamisation processes, indicated by mosques, subsidiary features, e.g. tombs, and artefacts began in northwestern Madagascar by at least the 11th century at Mahilaka and shortly later at Kingany, though it is possible that the founding community of the latter was at least partially Islamised (Sections 2.E.*III*.a and 5.B.*III*). However, both settlements were present before this point. Radimilahy suspects that the original population of Ampasindava Bay settled on small islets, namely Nosy Mamoko, in the western bay, until a wholesale move to the growing city of Mahilaka occurred in the 11th century (2017: 287). The early inhabitants of Ampasindava Bay, if not migrants from the Comorian Archipelago, were actively trading with Dembeni, Maorais and Nzwani communities from the 8th century and were consequently exposed to Islam via early converts (Radimilahy 2017: 289). At least three centuries later, according to oral tradition, these first Islamic Malagasy communities, and some Comorian settlers, expanded south to Boeni Bay, founding coastal settlements such as Antetikala and Nosy Makamby, and thereafter, Kingany (Vérin 1986: 157; Wright, *et al.* 1996: 46). While compositionally alike, sites displaying Indian Ocean connections with comparatively older strata, such as Irodo, Nosy Mangabe, and Andranosoa, in the north, northeast, and the far south respectively, locales in possession of 10th century goods from the Persian Gulf, i.e. *sgraffiato* sherds, lacked any compelling evidence for the local presence of Islam (Dewar, *et al.* 2013: 8; Dewar and Wright 1993: 431; Parker Pearson, *et al.* 2010: 104, 126). It is, however, probable that such communities fostered deep ties with their island neighbours, inadvertently laying the groundwork for future, prosperous Islamised trade ports. Based on available data, the Malagasy northwestern coast appears to have been the initial locus of Islamisation on the island at least in part a consequence of the region's ties to the swelling Swahili cultural complex via the Comoros (Beaujard 2019b: 371).

Current archaeological understanding positions the spread of Islam in Madagascar as roughly contemporary to, or slightly later than, the construction of the oldest stone mosques in the Comorian Archipelago, and multiple centuries after mainland African sites, e.g. Ras Mkumbuu and Shanga (Horton 2013: 12; Horton and Middleton 2000: 49). Islam is undeniably attestable in Comorian archaeological sequences from the 10th/11th centuries, although the exact depth of this Islamic chronology remains tentative, as two mosques of that period on Nzwani, the *Zira'at* of Old Sima and the *Mkiri wa Shirazi* of Domoni, saw multiple reconstructions with wooden analogues preceding stone phases, similar to the trajectory observed at Shanga (Section 2.D.*II*.b) (Horton 2017b: 488; Wright 1992: 88). Earlier evidence for Islam in the archipelago, namely a burial of an individual positioned in accordance with Islamic rites, was found in late Dembeni phase, 9th-11th centuries, contexts at Nyamawi, Ngazidja (Section 2.D.*II*.c) (Wright 2017b: 274). This burial was situated in strata without any supporting evidence of Islamic observance, highlighting the nuance of cultural shifts occurring in response to Islamisation in the Mozambique Channel. The interred individual was missing their incisors, a ritual/social procedure conducted on the African mainland for centuries prior to the 9th century (Morris 1993). The site had no compelling evidence for local oceanic trade connections (Wright 2017a: 274). Wright argued that, given the archaeological material uncovered, Nyamawi was a "humble fishing village with few wider contacts" (Wright 2017a: 274). Therefore, the individual buried at the site, feasibly a migrant from the southern African mainland, was unlikely to have been exposed to the faith via ocean-going merchants at Nyamawi itself. Instead, the individual likely migrated to the island from one of the few Muslim ports of the era, e.g. Chibuene, or was Islamised by some other unidentified mechanism (Sinclair 1987).

Generally, the earliest Islamisation mechanisms in effect in the Mozambique Channel were localised responses to Muslim traders and settlers from Islamised lands of the western Indian Ocean (Section 5.B), including a small number, of mostly male, Arabs, Indians, or Persians attestable both genetically and materially in the channel (Capredon, *et al.* 2013: 6). The population of the Comorian Archipelago swelled in the 8th century as transshipment entrepôts developed to harness the products output by largely preexisting communities and route valuable commodities, chlorite schist, gum copal, gold, ivory, rock crystal, skins, and enslaved peoples, from the Mozambique Channel and southern Africa to coastal East African ports and out into the Indian Ocean sphere (Pollard and Kinyera 2017: 927; Wright 2017a: 275). The initial Dembeni, African/Bantu, foundational population of these island trading posts were not necessarily Islamised, given the dearth of compelling traces of the faith in this phase, the exception being the Nyamawi grave, but their mercantile lifeways generated frequent cross-cultural interactions, facilitating the Islamisation of the archipelago in sequence with the neighbouring Swahili Coast (Horton and Chami 2017: 143; Wright 2017b: 274). Incentives for these mercantile people to acculturate and Islamise were many and diverse and thus homogenous expression was not inevitable. It is probable that some individuals genuinely embraced Islam and its teachings following introduction to the creed by practicing foreigners, while others embraced aspects of "Muslim-ness" to secure economic or social benefits (Horton 2017c; Horton and Chami 2017: 143-144).

Archaeology demonstrates that the metaphoric jump of Islam from the Comorian islands to Madagascar occurred in a similar fashion. Artefactual data demonstrate subtle dietary adjustments through time, attested to in the faunal and ceramic assemblages of Kingany, and to a lesser degree at Mahilaka, which alone are not sufficient or compelling confirmation of broader cultural changes housed under the umbrella of Islamisation (Sections 1.E.*II* and 5.B.*II*). However, when these lifeway shifts are contextualised in coordination with the site structural sequence, it becomes evident that northwestern coastal Malagasy populations who embraced ocean-facing foraging and/or universalists lifeways gradually diminished as Islam and Indian Ocean connections promulgated (Section 5.B.*III*). At Kingany Site II, universalist strategies persisted following fully realised Islamisation of the locale, marked by the 13th century construction of a centrally located monumental mosque and associated spatial reorientation, but were detectable only within distinct regions, i.e. the EOA (Section 5.B.*I*.c.*I*). Coeval changes to the site layout and settlement make-up, which appear to have been considerably more than just aesthetic analogues to coastal East African locales (Sections 5.B.*I* and 5.D), are certainly the product of social diversification and increased community heterogeneity instigated by migrations or intra-group conversion. Regardless of the pathway, of which many were certainly realised, Islam is archaeologically attestable in urban settings on Mayotte, Nzwani, and northwest Madagascar *circa* the 11th century (Section 5.B.*III*) (Wright 1992: 126).

Ultimately, the archaeological record roughly corroborates the oral tradition of Boeni Bay. The parallels between the Malagasy northwest and Islamised Comorian settlements from the 11th century onwards are too numerous to be explained away as convergent evolution. The proximity of the first Islamic communities of Madagascar, and the chronology of their Islamisation, to contemporary Comorian ports who maintained similar long-distance trade contacts, ceramic preferences, and dietary strategies, confidently attested materially and historically, leaves little doubt that the coastal towns of the Mozambique Channel were consistently interacting and fundamentally connected before the arrival of Europeans (Sections 2.D.*II* and 2.E.*III*). As a result, the sizeable Muslim populations present in the Comoros, noted in Arabic histories from at least the 12th century, who grew in response to exogenic, Indian Ocean influences, acted as both active and passive agents of Islamisation, propagating the faith in Ampasindava and, shortly later, Boeni Bay (Freeman-Grenville 1975: 19; Wright 2017a: 267).

5.C.*III*. Sectarian Affiliations

Elaborating on the hypothesis that early Comorian Muslim communities begot those of northwestern Madagascar (Section 5.C.*II*), and maintained demonstrably close connections subsequently, mercantile and otherwise (Section 5.C.*I*), it is reasonable to postulate that there was a limited set of denominations in the region. However, confidently identifying potential sectarian progenitors for local Islams is complicated by the diversity present in extant and archaeological settings. For example, the present-day Muslim community of Mahilaka describe their sect as “Anjuju”, or Anjouani, linking themselves and their beliefs to important regional schools of Islamic learning, but are proudly permissive of alcohol consumption (Section 3.C.*I*.c). The people of Morafeno, who simply refer to their faith as *ṭawḥīd*, are outwardly devote *Shāfiʿī* Sunnis who do not publicly drink alcohol, yet they bury their dead according to ethnic traditions which are not always in accordance with Islamic practice (Section 5.B.*III*) (Dezy *pers. comm.* 21 May 2019). Both communities see their current Islamic expression as belonging to a deep continuity of practice, intimately tying them to the ruins embedded in their respective towns, despite significant chronological, and potential ethnic, gaps between the present-day settlements and the archaeological sites.

In the early-second millennium, Islam reached the Comorian Archipelago, and was subsequently localised to fit within regional belief systems and lifeways prior to being transmitted to Madagascar. Strictly seeking to identify the bough of Islam from which these syncretic realisations derived is feasible through linkage reconstruction and comparative analysis. Contemporaries of the early Islamic settlements of Nzwani include Shanga which, according to the *Kilwa Chronicles*, was one of the seven settlements established by the same group of Shirazi brothers that later arrived in the Comoros (Horton 2017a: 214; Horton and Middleton 2000: 52). Mark Horton, following in the footsteps of numerous other archaeologists and historians (cf. Pouwels 1974; Wilkinson 1981), has long attempted to map the sectarian chronology of Shanga based on attributes of the archaeological assemblage. Horton has at times argued for an Ibadi presence at Shanga, hailing from Omani or Persian Gulf ports, citing prevalence of corresponding imports and architectural stylistic comparisons (Horton 2013). Ibadi groups, evidence for whom is detectable in early habitational strata at Shanga, potentially inspired the lingering "oligarchic organization" of the later "northern Swahili coast city-states" (Beaujard 2007: 24). Horton (1996$_b$: 426; 2017$_a$: 214) argues that the sectarian/cultural landscape of Shanga, and presumably linked coeval East African settlements, changed in the 10th century, visible via archaeological and numismatic data. A marked influx of *Zaydiyya* Shi'a settlers is indicated in that century by local production and limited circulation of distinct coinage (Horton 2013; 2017$_a$: 214; Insoll 2003: 179). This theory is cognate to mid-20th century theories of a considerable swell in Shi'a influence on the trade and ensuing Islamisation of the Swahili in the 10th-12th centuries, albeit often specifically in regard to the Qarmatians (Pouwels 1974). These theories assert that Shi'ism spread the length of coastal East Africa in this period, occupying the Zanzibar Archipelago, Kilwa, and likely the Comoros, perhaps displacing earlier Ibadi and Sunni groups in some instances, an expansion event recounted in the Shirazi mythos, according to Horton (Horton 2017$_a$: 218).

The movement of people was rarely unidirectional in the western Indian Ocean. While the vast networks which engaged in and facilitated the sale of enslaved Africans are well attested to, concurrent African instigated travel and trade from the peripheries to world-system cores is only beginning to be reexplored and woven into the historical understanding of the medieval Indian Ocean (Beaujard 2017). These interactions would have further exposed and familiarised East Africans with Islam, which, depending on the frequency, could have been equal in their potency to the aforementioned Arabo-Persian east-west trade and minor migrations. The town of Sharma functioned as a transit entrepôt for monsoon trade, and certainly benefited from its proximate mesial positioning to major maritime trade routes (Fleisher, *et al.* 2015: 106; LaViolette 2017: 232). Philippe Beaujard (2017: 369) has recommended that a seasonal East African community of sailors and enslaved individuals made use of the stop from at least the 10th century (Rougeulle 2015). Material evidence for an African presence was considerable. Upwards of 12% of local unglazed ceramics at the site resembled those produced in contemporary strata on the Swahili Coast, with notable affinity to the typologies present at Shanga (Rougeulle 2003: 296; Wynne-Jones 2016: 187). A small, "African-like" mosque of Sharma might have been constructed to serve this seasonal, partially Islamised, African community (Horton 2017b: 488; Rougeulle 2015: 125). Additionally, Malagasy commodities, such as gum copal, were also present (Beaujard 2017: 369). Material evidence recovered from Kingany during the 2019 campaign (Sections 4.C*.II* and 5.*B.III*) confidently link the community at Site II to the Hadhramaut and potentially Sharma during its period of decline, *circa* 12th century, hence the absence of black-on-yellow wares at the former (Wright, *et al.* 1996: 51-52). Mahilaka was undoubtedly active along this route as well, evidenced by the appearance of *Mus musculus*, house mouse, in its assemblage (Duplantier *et al*. 2002: 156; Rakotozafy 1996). Malagasy mice, first present in Mahilaka, possess little genetic diversity and are genotypically and phenotypically similar to Yemeni species, indicative of direct colonisation events between the locales, almost certainly the result of ocean-based travel (Duplantier *et al*. 2002: 156-157). Therefore, it is possible that Kingany was directly or indirectly exposed to the milieu of Ibadi, Isma'ili, and Zaydi practitioners active in that region in the early-second millennium (Wilkinson 1981).

Many more Islamic groups, including various *Sufi ṭarīqa*s, namely the *Shadhiliyya* and *Qadriyya*, would interact with coastal East Africa and the Mozambique Channel in the following centuries, via trade, pilgrimage, piracy, or migration (Lodhi 1994; Nimtz 1980: 57-60). Their impact, often more localised in effect, is detected to this day. The most notable of these later introductions is the *Shāfiʿī madhhab*, which grew in importance beginning in the 13th century and is perhaps the largest sect in East Africa today (Sutton 2001; Wilkinson 1981). It is crucial to reiterate that decades of archaeological investigations along the Swahili coast have produced datasets that generally disagree with *Kilwa Chronicles*-esque traditions asserting mass Islamic migration, that is until the historically attested Omani colonisation beginning in the 17th century (Wynne-Jones 2016: 57, 195). Instead, what has been observed is the adaptation and indigenisation of Islamic practices and cosmologies into regional systems developed in the *longue durée* (Horton and Middleton 2000; Wynne-Jones 2016: 57). The Comorian Archipelago and Madagascar were exceptions, having been peopled via numerous colonisation events, which intensified in the late first millennium, although they were decidedly not passive in their Islamisation (Radimilahy and Crossland 2015). Ultimately, just like the core Islamic territories, coastal east African and the Mozambique Channel were subject to the interest of numerous interested creeds, parties, and regions, including other Africans, and it is illogical to suspect that only a single sect was present at any given time (Wynne-Jones and Fleisher 2020: 383-384).

5.D. Boeni Bay and Coastal East Africa. Comparative Perspectives

Having identified general chronologies, trajectories, and mechanisms for the Islamisation of Boeni Bay in the archaeological record of Kingany, it is necessary that observed trends be compared to the contemporary western Mozambique Channel and neighbouring Swahili Coast. The extensive similarity of the case study site to the mainland locales have been discussed at numerous points in this thesis (Sections 4.C.*II* and 5.B), hence portions of this segment will be targeted and summative.

5.D.*I*. Architectural Interconnections

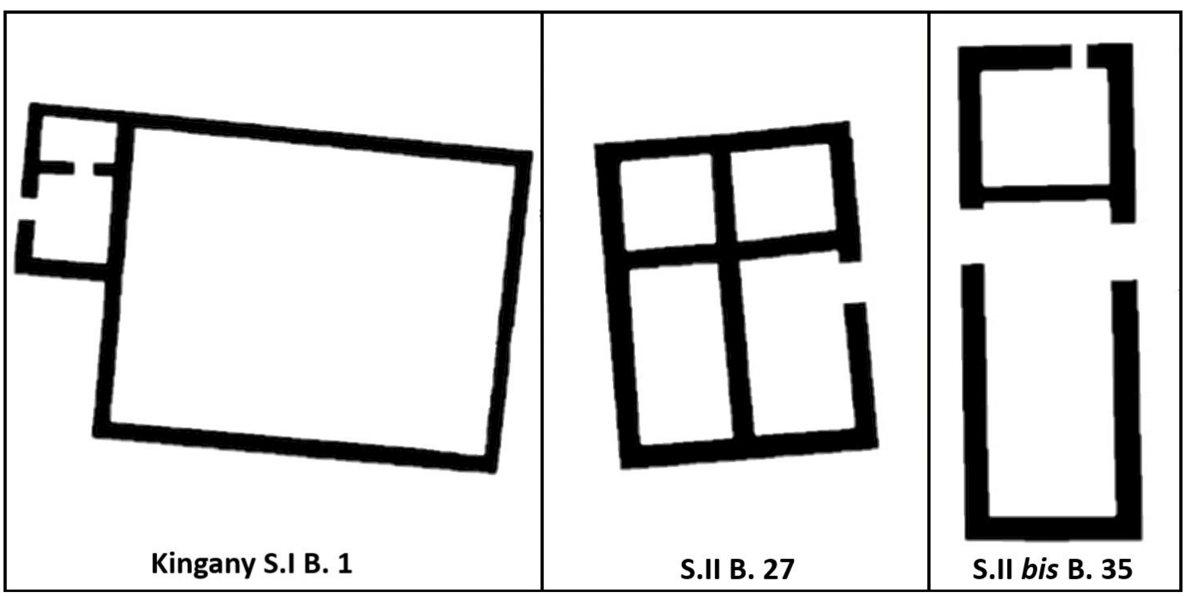


Figure 5.26: Simplified houses plans at Kingany. Site I Building 1, Site II Building 27, and Site II *bis* Building 35.

Architectural traditions present at Kingany and, to a lesser degree, Nosy Makamby, fit within the broad 13th-15th century Swahili coastal modus operandi (Pradines

2012). While Mahilaka and the Androy walled settlements very specifically mirror the town of Manda, in the technological processes employed for construction and in general chronology, the standing architecture at Kingany can be more confidently associated with the development and regional expansions of the quintessential Shirazi style (Figure 5.26) (Fleisher, *et al.* 2015: 107; Horton 2017b: 490; Kusimba, *et al.* 2017: 160). While arguments for Swahili-like socio-cultural lifeways at Kingany, supported by portable material-cultural evidence, have been presented throughout this thesis (Sections 4.D and 5.B.*II*), documented linkages are not strictly material. Most notably, Boeni Bay towns were included as the terminal destinations of Islamic expansion in Comorian variants of the Shirazi narrative, e.g. the chronicles of Mayotte and Ngazidja, understood by archaeologists to be a social reconciliation of centuries-long phenomena of convergent cultural expression along the East African littoral (Adamowicz 2012: 13; Fontoynont and Raomandahy 1937: 12: Horton and Chami 2017: 136). Incorporation into critical self-defining cultural dialogues would not have been adventitious and must be proof of strong group affiliation between Boeni Bay and the Comorian Swahili complex.

As exhibited in the oral tradition, the architecture of Kingany displays a none-too-subtle relationship to that of the Shirazi core settlements of the Lamu and Kilwa archipelagos. The few surviving residential structures of Kingany possess hall-like layouts, predicated by the dimensions of mangrove timbers used for ceiling beams, that were common in coastal East Africa (Figure 5.26) (Gensheimer 2017: 501). Much like the mosques, tombs, and walls of the sites, these houses were built of coral rag and limestone covered in plaster arranged according to a set *dhirāʿ* (Figure 5.2) (Section 3.C.*I*.b). No evidence for stone ceilings or corresponding support pillars were found at Kingany, outside of a collapsed octagonal column in the enclosure of Site II Tomb 9 (Section 3.C.*I*.b), indicating that buildings were likely topped in thatched organic materials. *Macuti* ceilings were common for both domestic and religious structures, with equivalent examples found at Shanga, Songo Mnara, and towns of the present day (Horton: 2017a: 216; Wynne-Jones 2013: 766). Singular embellishments and attributes of standing structures at Kingany were further attestation of coastal East African connections. Site I Building 1, the southern mosque, and the potential *madrasa* all possessed inset wall niches within their innermost chambers, not dissimilar to the *zidaka* of Kingany's Swahili contemporaries (Figure 3.22) (Gensheimer 2017).

Arch forms serve as further evidence of architectural likeness. Only a singular arch survives in its entirety at Kingany, that of Site II Tomb 7 (Figure 5.27). The arch has a rounded crown with apex-nick, a typical Swahili type with analogues found in the Kilwa complex at Songo Mnara (Horton, Fleisher, and Wynne-Jones 2017). The window arch of Tomb 7 has a horizontal cavity tracing its sill, potentially marking the location of a now-lost wooden component (Figure 5.27). A strikingly similar cavity was observed at the base of a four-centred arched window in the Tungi palace (Figure 5.28). These sub-arch negatives evince the longevity of the shared Swahili architectural tradition, and its technical underpinnings, given the sites were likely separated by multiple centuries. Other discernible arches at Site II, found at all doorways of the northern mosque and on the eastern portal of the southern mosque (Figures 5.3 and 5.22), do not survive past their visible, limestone imposts.

Figures 5.27 and 5.28: Left: Kingany Site II Tomb 7 window**; Right:** Window at Tungi palace.

Given the arguable similitude between Boeni Bay and coastal East African structures, the austere simplicity of the stone homes at Kingany is peculiar. The artefactual assemblage of Site II argues for at least seasonal visitation by Arab/Swahili merchants to the site (Section 5.B.*II*), sojourns not reflected in the "elite architecture" itself (Dewar and Richard 2012: 506). Swahili houses of the period were often extended and complex places with both economic hospitality and familial intimacy thoughtfully incorporated into their layouts (Wynne-Jones 2013: 763). All standing residential structures at Kingany lack the space to accommodate such practices, leaving the procedures for housing of temporary residents at Kingany a mystery. That said, the proportions, layouts, materials, and general aesthetic of stone houses at Kingany recall those of the Swahili to a degree which cannot be happenstance.

Outwardly, the stone structures of Kingany are more akin to Langany, the 13th century Kenyan sites of Mnarani and Dondo, and the colonial-era settlements of Antsoheribory and Tungi than Mahilaka, the Androy towns, or similarly dated early-second millennium Malagasy sites (Sections 2.C.*IV*.a and 3.C.*I*.a). Tomb decorations in particular, namely coral bosses, inset panels, and winged tombs, present strong evidence for shared cultural expression between Kingany and the 14th century Kenyan coast (cf. Kirkman 1959b), though, these examples primarily belong to the final occupational phase of Site II, subsequent to the construction of the northern mosque (Section 5.B.*I*.b). Visual similarities to colonial-era sites were a consequence of the longevity of architectural technological practice and conservatism of form present in coastal East Africa, and not necessarily a result of direct association (Horton 2017b: 497). Close examination of the structures in question does present substantive differences in the preferred materials and elaboration of architectural motifs employed at Kingany and later sites. These inconsistencies are patently indicative of chronological disparities, namely the use of coralline limestone, popular in the 13th century, as opposed to horizontally-coursed, concrete bonded walls, which appeared in the 15th century (Pradines 2012). This sequential technological evolution, originally developed from coastal East African examples, is visible at an intra-site scale and was drawn upon by the author to approximate the relative succession of mosques at Kingany (Section 5.B.*I*.a). Thus, while similar overall, on account of a shared architectural heritage, Kingany undeniably preceded those colonial-era sites.

Other particularities of mosque and tomb architecture at Kingany have been discussed above (Sections 5.B.*I*.a and 5.B.*I*.b) and hence have not been reiterated here. However, it must be emphasised that many identifiable structural attributes of both are fundamentally identical to types found throughout coastal East Africa.

5.D.*II*. Tangible Connections Observed in Spatial Utilisation

The stone architecture of Kingany Site II breaks up the space in a familiar, albeit amorphous, fashion (Figure 3.20). So far, no decipherable orthogonal arrangement or clearly defined roads have been recognised at the settlement. It is reasonable to suspect that Kingany lacked such internal structuring, evincing a natural or unplanned development, akin to many of its Swahili neighbours (Fleisher and Wynne-Jones 2012: 182). It can be argued in lieu of such delineating features that mosques acted as the principal organisational foci, both in a social and civic sense (Fleisher and Wynne-Jones 2012: 178; Fleisher, *et al.* 2015: 107). The town radiated from the mesial southern, and later, northern mosques, positioning and orienting subsequent features accordingly, the expanse of which is only partially visible in the surviving architecture.

Examination of the constructed environment and relative found-artefact bulk weights from the sondages at Kingany Site II enables the reconstruction of approximate site utilisation patterns (Section 4.C.*II*.b). In the absence of evidence for rubbish dumps, inferences made in this section are based on the assumption that objects were discarded in close proximity to where they had been utilised. Operating with this understanding, those portions of the site with higher concentrations of ceramics were areas which experienced more daily activity in which pottery was being used, i.e. residential food preparation, or kilns/workshops. Similarly, those parts of the site that contained more daub were places in which impermanent architecture once stood. Moreover, relative spatial density of artefacts, when paired with rarer imported goods, enable conclusions to be drawn regarding degrees of community access to Indian Ocean markets.

Evidence would suggest that all but the most elite of Kingany society lived in impermanent structures, made of either wattle-and-daub or woven *macuti* architecture as was the case at nearly all contemporary Swahili towns (Figure 5.24) (Fleisher and Wynne-Jones 2012). Artefacts recovered from COA probing pits recommend that a domestic complex of impermanent structures engaged in cottage textile and ceramic industries occupied the urban centre of Kingany (Section 4.C.*II*.b.*i.1*). Analogous assemblages were identified in the WOA (Section

4.C.*II*.b.*i.3*). Imported objects found there, namely glass beads, monochrome green-glazed and Yemeni water-jar sherds, and glass vessel fragments, reveal that access to long-distance trade/luxury goods was not limited to the presumably elite, stone-house residents (Priestman 2011: 93; Wood, Dussubieux, and Robertshaw 2012: 62, 65).

Interestingly, comparing daub densities from the COA sondages reveals that it was not necessarily the case that units with more daub had more of other artefacts. PP5 and PP7, containing less than 1 g of daub and more than 200 g of undecorated local ceramics, were more materially dense than PP6, the unit with the second-most daub. The lack of daub in PP5 might indicate that no housing was located immediately northeast of the southern mosque (Figure 4.16), which corresponds well with the tendency of Swahili settlements to prioritise the space adjacent to *qibla* walls for burials (Fleisher 2010$_{a}$: 17). Extrapolating from this observation, it could be the case that the ceramic remains from PP5 comprise fragments of topical grave offerings left for a tomb no longer visible at surface level, pottery discarded following a "graveside feast", or any number of other related practices observed throughout the Islamic world (Babalola and Fleisher: 323; Mershen 2004: 177; Schöller 2004). The combined weight of daub found in the thoroughfare between the southern mosque and a well, Site II Structure 29b, recovered from TU2 and PP25, indicate that this path was cluttered in the past (Sections 4.C.*II*.b.*i.5* and 4.C.*II*.d.*i*). Stratigraphically contextualising artefacts from TU2 reveals that greater than 90% of the daub and local ceramics were found within the first metre of soil, above Stratum E (Figure 3.40). The contents of these strata have been determined by the author to postdate the southern mosque construction, thus belonging to the Islamised occupational phase of Kingany (Section 5.B.*III*). In addition to the architectural debris, 156 of the 171 metal objects found in TU2, included slag, interim stages of iron production such as iron prills, and completed products, namely a needle and a chain-link, were in the initial metre of fill along with a ceramic tuyère (Sections 4.C.*II*.d.*i* and 4.C.*II*.d.*iv*). Furthermore, those contexts containing the most metal artefacts, specifically TU2-3 and TU2-4, were composed of mottled, charcoal-rich,

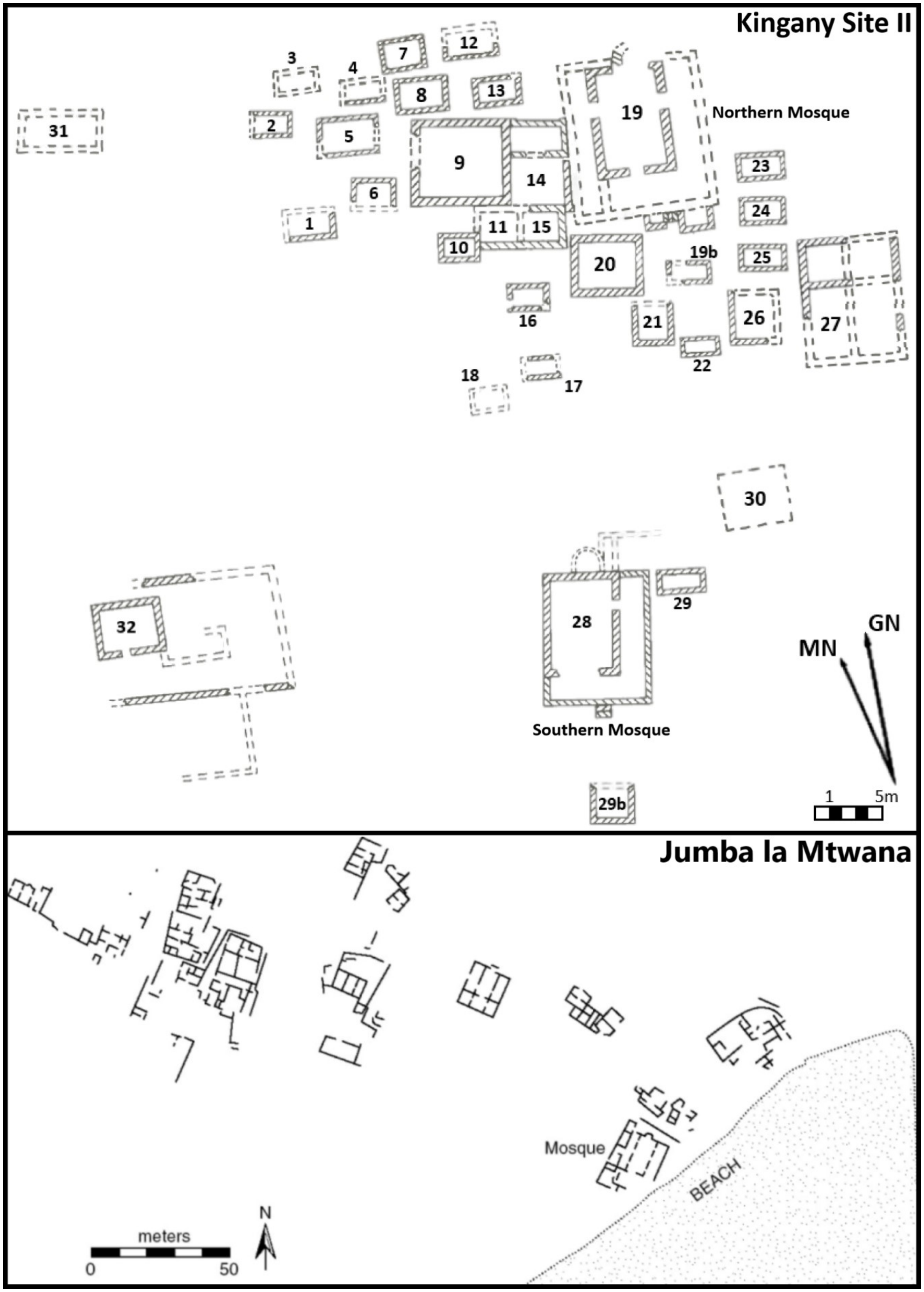


Figure 5.29: Comparison of Kingany Site II (based on Vérin 1975a: 304) and Jumba la Mtwana, Kenya (Wynne-Jones and Fleisher 2014: 128).

dark soil (Figure 3.40). From these remains it can be inferred that small-scale smithing of iron using daub furnaces occurred adjacent to the well. However, no intact furnace fragments were found and less than 30 g of iron slag were recovered from TU2, considerably less than what would be expected of a sizeable furnace (Section 4.C.*II*.d.*iv*).

It would appear that the commercial and mundane directly abutted religious and funerary spaces at Kingany, with the settlement organised according to simple prioritisation hierarchies around the two centrally-located mosques. *Qibla* walls and their immediate arena enveloped by *baraka* was reserved for the dead (Section 5.B.*I*.b). The mosque flanks, however, could function as domestic or industrial space, within mere metres of the sanctuary. A cursory glance at the northern mosque and surrounding tombs might seem to refute this hypothesis, but when chronologically contextualised, it becomes clear that the latter predate the former (Figure 5.6). The northern mosque, then, was positioned in a zone congested with tombs for another purpose altogether, possibly as a beacon of Islam visible from the ocean (Section 5.B.*I*.a). Spatially and architecturally speaking, Kingany was structured in much the same way as a 13th century Swahili town, e.g. Jumba la Mtwana, Kenya, and was certainly intimately integrated into coastal East African networks (Figure 5.29) (Fleisher and Wynne-Jones 2012).

5.D.*III.* Islamisation of Coastal Mozambique. Comparative Perspectives

The existence of Islamic individuals in Madagascar is archaeologically attestable by the 11th century, a century later than in the nearby Comorian Archipelago (Section 5.C.*II*). Nevertheless, evidence for Islamised peoples in northwest Madagascar predates most currently accepted chronologies for Islamisation in Mozambique, with the exception of Chibuene and potential outposts near the Sofala (Buzi) River (Dickinson 1975: 84; Sinclair 1987). As discussed in Section 2.C.*II*.a, from the 7th century Chibuene functioned as the principal Indian Ocean conduit to interior and southern African trade, through which gold and other valuable commodities flowed, making it largely an outlier in the Comorian-dominated Mozambique Channel trading lanes of the following centuries (Wood, Dussubieux, and Robertshaw 2012: 60; Wright 2018$_a$: 275). An unmarked, 9th century burial at Chibuene is one of the earliest known Islamic burials in Sub-Saharan Africa (Badenhorst, *et al.* 2011: 6; Insoll 2003: 167; Sinclair 1987: 87).

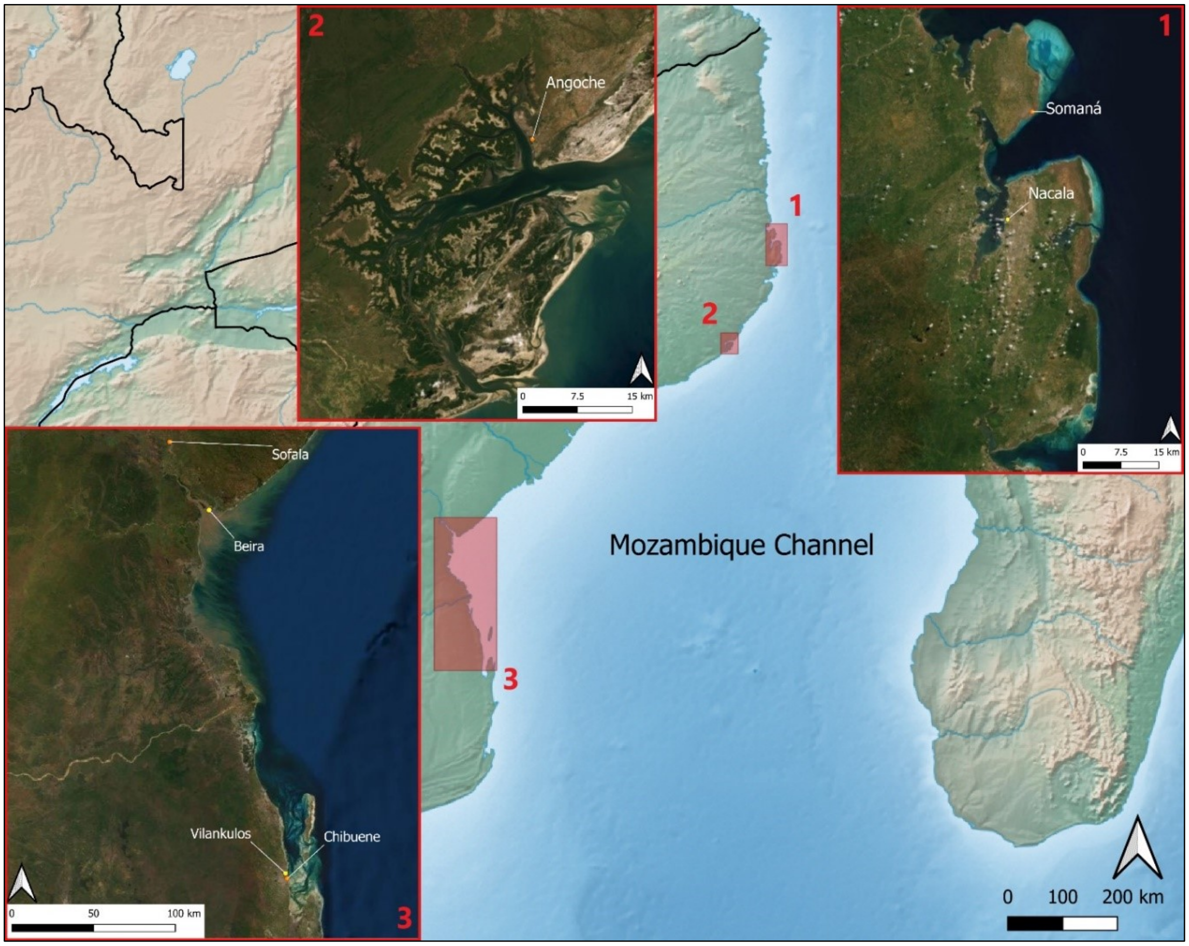


Figure 5.30: Select Mozambican archaeological sites with evidence for Indian Ocean engagement.

Much like Chibuene, the towns of Sofala acted as transshipment nodes for gold, ivory, and skins and were visited by Indian Ocean-going merchants from an early period (Freeman-Grenville 1975: 15). The entrepôts of Sofala, named as Batyna (Banyna), Daghuta, Leirana, Seruna (Sayuna), were described early in Arabic histories, notably in al-Masʿūdī's 10th century *Murūj al-dhahab wa-maʿādin al-jawāhir*, as the land beyond the *Zanj* where voyages from Oman and Sīrāf terminated (Dickinson 1975b: 85; Freeman-Grenville 1975: 15, 23; Trimingham 1975a: 126). These towns were well integrated into the Indian Ocean world system by the 12th century, indicated by al-Idrīsī's description of Sayuna in the *Nuzhat al-mushtāq fī ikhtirāq al-āfāq*, and consequently would have been frequented by Muslims merchants (Jaubert 1836: 66; Trimingham 1975a: 126; Wood, Dussubieux, and

Robertshaw 2012: 72). Much like the Comorian entrepôts, Chibuene and Sofala were home to Bantu groups, evidenced by TIW ceramics, with probable pre-Islamic Indian Ocean engagements, and experienced at least partial Islamisation as a byproduct of prolonged mercantile interaction with the Persian Gulf and at least temporary habitation by monsoon-dependent Islamic merchants (Sinclair 1982; Sinclair, Ekblom, and Wood 2012: 727). These outposts, which were constructed of largely impermanent architecture, likely fluctuated in size seasonally and depending on shifts in outbound interior trade, unlike the stabilised settlements of Nzwani and northwest Madagascar (Ekblom 2012: 480; Wood, Dussubieux, and Robertshaw 2012).

Importantly, according to al-Idrīsī, the Sofalan town of Jusṭa traded directly with "Qumr[ians]" and the people of *Zabag*, understood by historians to be the Malagasy and Comorians respectively (Section 1.D.*I*) (Beaujard 2019$_b$: 140). It is believed that Mahilaka, and potentially the Malagasy outposts in Androy, engaged with southern Mozambique Channel nodes at Sofala and Chibuene, recommended by the complimentary assemblages of the sites (Beaujard 2019$_b$: 140; Parker Pearson, *et al.* 2010: 126). The connection between far southern Madagascar and coastal East Africa actually predates this period as a number of locales in the Menarandra Valley possessed TIW evincing a Proto-Swahili presence absent from most of the island (Beaujard 2011: 172; Parker Pearson, *et al.* 2010: 79-83). Kingany, who garnered access to maritime trade lanes as early as the 12th century, appears to have favoured northbound/coming trade though, inferred from the numerous typological equivalencies shared with Nzwani, the Kilwa Archipelago, and the Hadhramaut (Section 4.C.*II*). This could, however, be the result of relative chronological dissonance between early Boeni Bay and Mozambican sites. The archaeological assemblage of Site II displays only limited engagement with Indian Ocean networks prior to the 13th century. Chibuene was abandoned for approximately 200 years, *circa* the 11th-13th centuries, according to its archaeological record, before returning as an interior-focused, vassal-state of Great Zimbabwe (Badenhorst, *et al.* 2011: 5; Ekblom 2012: 480; Wood, Dussubieux, and Robertshaw 2012: 60, 71). Thus, Kingany's forays into Indian Ocean mercantilism largely succeeded the first, and arguably more influential, settlement at Chibuene. Arabic and later Portuguese, e.g.

João de Barros, histories attest to the continued prominence of Sofalan towns during the occupational and mercantile "golden age" of Kingany, roughly 13th-early 15th centuries (Section 1.C) (Freeman-Grenville 1975). However, as these locales have not been convincingly located, and *ergo* remain archaeologically uninvestigated, connections between the Boeni Bay and Sofala can only be speculative at this juncture.

For the reasons outlined in Section 2.C, archaeological studies of precolonial settlements in Mozambique have been sparse. Given the dearth of comprehensive studies available, and the seemingly late habitational chronology of the sites visited during the Mozambican leg of the fieldwork, specifically the Tungi complex (Sections 2.C.*IV*.a and 3.B.*I*.e), the author chose to hone in on two Mozambican coastal sites with evidence of Indian Ocean contacts that were roughly contemporary with Kingany by which to briefly contrast Islamisation chronologies.

5.D.*III*.a. Somaná

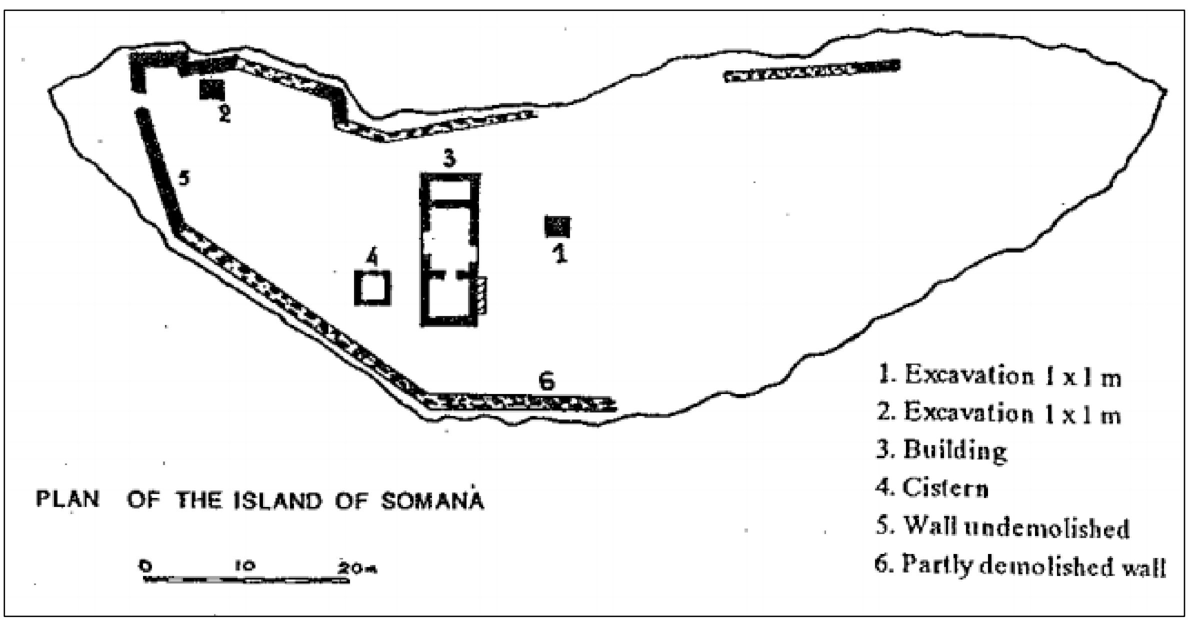


Figure 5.31: Plan of Somaná Island, Duarte 1993: 62.

The multi-component archaeological site of Somaná, located on a small, nearshore island, with associated ruins on the adjacent mainland, was originally recorded and excavated by Ricardo Duarte in the early 1980s (Figure 5.30) (1993: 61). A three room, hall-like, coral rag structure, adjacent cistern, and lengths of perimeter wall were recorded on the island, although only a low wall remains visible of the mainland component (Figure 5.31) (Duarte 1993: 61-62). The island building was approximately *qibla* aligned, but lacked a *miḥrāb* niche, and was therefore probably not a mosque (Duarte 1993: 65). Somaná's architecture, especially that of the stone residential structure, exhibits a decidedly Swahili style strikingly resonant of the linear homes of Kingany (Section 5.D.*I*).

The archaeological assemblage at Somaná represents a small, precolonial trading centre the inhabitants of which manufactured and traded worked cowrie and shell beads from the 12th century until it was abandoned in the 15th century (Duarte 1993: 67; Duarte and Meneses 1996: 555; Isendahl 2002: 11). The shell raw material was likely imported from elsewhere in the western Indian Ocean and worked goods were traded to the continental interior. Curiously, imported ceramics were not detailed in the site report, and were presumably absent from the assemblage (Duarte 1993). Ceramics at Somaná were principally of the locally produced Lumbo type, 13th-15th centuries, with motifs dissimilar to those of Kingany Site II, although some "stamp" banded sherds of the former were evocative of impressed "small dot" patterns of the Malagasy northwest (Figure 5.17) (Duarte 1993: 130; Radimilahy 1998: 149). Morphologically, ratios of carinated bowls in the assemblages were congruent (Section 4.C.*II*.d.*i*) (Pawlowicz 2013: 390; Sinclair 1985). Despite possessing Swahili-style coral architecture, accented with *porites*, and ceramic similarities to Swahili and Malagasy assemblages, Somaná had comparatively less Indian Ocean participation than the Boeni Bay, and has yet to produce evidence for the presence of Islamised peoples.

5.D.*III*.b. Angoche

Angoche Island, located in the ria of the Mluli River, adjacent to the modern-day town of Angoche, famously maintained an adversarial relationship with Portuguese colonial governors for much of the latter half of the second millennium (Figure 5.30) (Isendahl 2002: 5; Newitt 1995: 274). The oral traditions in the *Chronicles of Angoche* attribute the settlement's establishment to an exodus event in which patrician families fled Kilwa Kisiwani *circa* 1480 (Lupi 1907). The *Chronicles of Mayotte* list Angoche as one of the original towns founded by the Shirazi brother of popular myth, effectively asserting a chronology deeper than that held by its own local traditions (Rotter 1976: 25-27; Rzewuski 1991: 209). Interestingly, a "Boueni" is enumerated among these first Shirazi towns in this account (Adamowicz 2012: 13), geographically referring to the Malagasy settlement of Antsoheribory, the successor of Kingany in Boeni Bay (Fontoynont and Raomandahy 1937: 12). Christian Isendahl has argued that the 15th century foundation date of Angoche in these texts was not literal, and instead denotes a point in which the settlement and its sultanate began to "play a substantial role in the regional politics and economies" (2002: 2). The island was positioned to benefit from a reorientation of the southern-central African gold trade, which followed the disruption of centuries-old trading lanes in the 15th century (Newitt 1995: 35). The growth of overland routes from the upper Zambezi, as detailed by Duarte Barbosa in the 16th century, saw the Swahili dynasties at Angoche become mercantile rivals to Sofala, in a prosperous, but short-lived, middlemen role that ended abruptly with a Portuguese assault in 1511 (Barbosa 1995: 9; Isendahl 2002: 3; Newitt 1995: 11, 401). Angoche rebuilt following this attack, but the sultanate's regional role was greatly diminished thereafter (Newitt 1995: 274).

Archaeological investigations of Angoche, those being brief surveys by Vérin and later by Dickinson and the then University of Rhodesia in the 1970s, small scale excavations by Eduardo Mondlane University a decade later, and marine reconnaissance in 2016 by Edward Pollard of Ulster University, have made the site relatively well studied for a Mozambican locale, although still generally under-researched given that the results of the excavations were never formally published (Dickinson 1975a; Isendahl 2002: 10; Pollard 2017; Vérin 1970). Nevertheless, from the available archaeological and historical data it can be determined that Angoche was integrally connected to coastal and oceanic mercantile networks and experienced an influx of African Muslims prior to the 16th century (Isendahl 2002: 10; Newitt 1995; Rzewuski 1991). The various histories of the site, despite their disagreements, assert that an Islamic population was present at Angoche by at least the late 15th century, many centuries after Islamised people were present in the Comorian Archipelago and northwest Madagascar (Section 5.C.*II*). The mechanisms for Islamisation, in this case extrapolated from Isendahl's hypothesis that the settlement of Angoche predated the arrival of the Kilwa patricians, vary considerably from those observed at Kingany (Section 5.B.*III*) (2002: 2). While evidence for conversion and possible migrations by Islamised people to Kingany was found by the author in the archaeological record for Site II, historical accounts for Angoche only designate the presence of a non-local Muslim upper class. At Kingany, no correlation between Islamic practice and social strata was identified, with the possible exception of the enslaved peoples whose presence was inferred from tombstone epigraphy (Section 5.B).

By and large, northwest Madagascar appears to have possessed Islamic populations earlier than Mozambique by at least two centuries. While the current state of scholarship precludes the production of major conclusions, Mozambican coastal sites with material evidence of Indian Ocean engagement, other than Chibuene and Sofala, appear to have comparatively younger chronologies, typically with habitation phases beginning in the 13th century or later. This general pattern holds true for the all investigated sites on Ilha de Moçambique and within the Quirimbas Archipelago, many of which date exclusively to the colonial period, though Ibo, Macaloe, and Vamizi are suspected to be older, despite being in similar environments and at roughly the same latitude as Boeni Bay (Duarte 1993; Duarte and Meneses 1996; Madiquida 2007: 107; Torres, *et al*. 2016).

5.D.*IV*. Potential Factors Limiting Islamisation in the Mozambique Channel

Current archaeological understanding holds that African, Swahili, and Arabo-Persian merchant preferences dictated early exposure to Islam in the Mozambique Channel, a theory corroborated in part by the recent campaigns at Kingany (Radimilahy and Crossland 2015: 499, 504; Wright 2017b). The Comorian Archipelago, particularly Nzwani and Mayotte, served as a more manageable base of operations for Indian Ocean traders in the late 1st/early 2nd millennium, in comparison to the rest of the channel, as sailors were able to avoid the complex currents of the interior Mozambique Channel (Figure 5.32), while remaining within reach of the greater seasonal monsoons and the East African Coastal Current (Lane and Breen 2017: 20; Sætre 1985: 1458). However, due to the modest size of early towns in the archipelago, with even the proto-urban Islamic settlements containing no more than

500 individuals, inter-Island movement of people would have been frequent and necessary (Wright 2017_a: 267). This population shuffling, which defied the treacherous currents and reefs of the archipelago, was certainly a critical agent in the Islamisation of the Comoros and is thought to explain the homogeneity of the Dembeni phase (Wright 2017_a: 267).

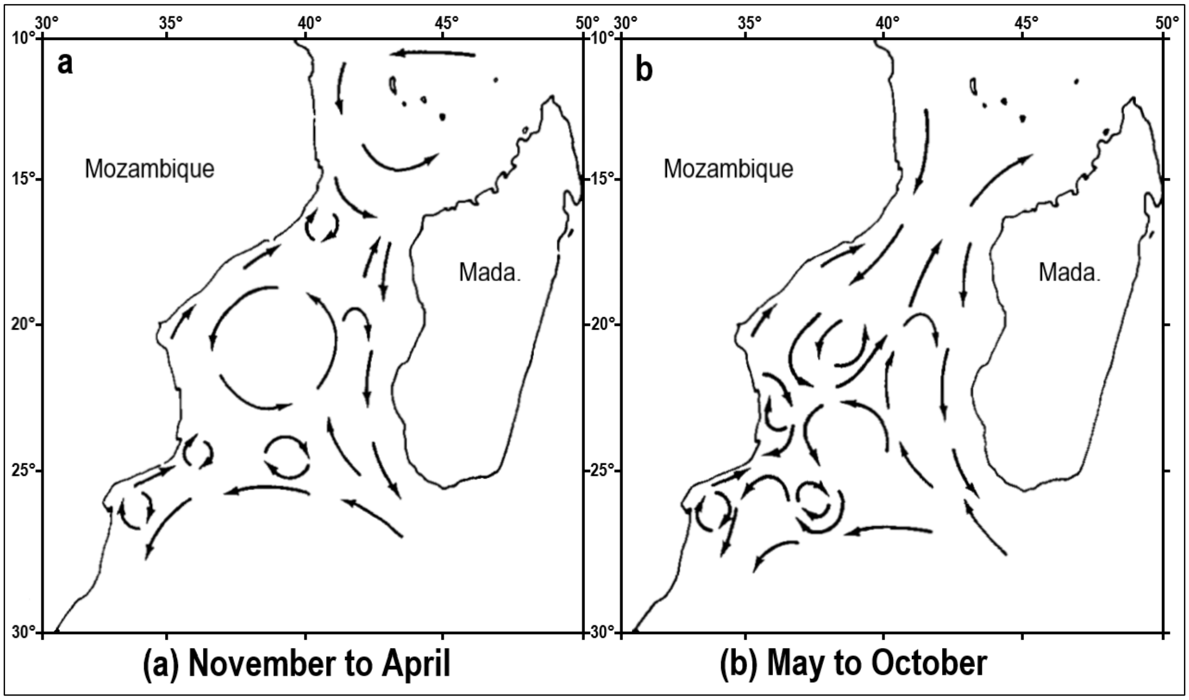


Figure 5.32: Currents of the Mozambique Channel, based on Sætre 1985: 1459.

Seasonally shifting currents within the Mozambique Channel made northwestern Madagascar, and to a lesser extent the Androy region, most easily accessible from the Indian Ocean via the Comorian Archipelago between the months of May and October (Figure 5.32) (Sætre 1985: 1458). Arabic sources map southbound journeys, specifically from Aden to *Qumr*, as a three-season affair including a series of doldrum layovers in the regional Islamic ports of the channel, e.g. Kilwa, Mahilaka, and Sima (Beaujard 2019_b: 387). Monsoon traders would have been subjected to an additional sailing season to reach the inner Mozambique Channel due to the temporal dissonance between accessible currents and the northeasterly winds. It is probable that this threat of a greatly prolonged journey prevented all but the most dedicated merchants from undertaking the passage down the Mozambique Channel. This barrier might be partially responsible for the relatively late spread of Islam to coastal Mozambique. Conversely, northern Madagascar was accessible from Mayotte and Nzwani, and vice versa, year-round. These circumstances ensured that the Malagasy closely interacted with their Comorian counterparts in these early centuries. As a result, early Malagasy Islam shared close ties to contemporary Comorian variants, as is the case today in the northwest (Section 5.C).

Oceanographic phenomena plausibly contributed to coastal Mozambique's comparatively late integration into western Indian Ocean networks. Wholly different barriers, such as mythos surrounding *al-Wāq Wāq*, namely those which painted scenes of a distant, untamed land of pirates and monsters south of Sofala and the *Zanj*, could have been partially to blame for the restricted Islamic settlement of Madagascar (Freeman-Grenville 1975: 14-16). Described by al-Masʿūdī in the 10th century and included in al-Idrīsī's 12th century atlas, the land of *Wāq* might have served as a literary device for the distant unknown, without a set location, being depicted east of China and in the far south simultaneously (Tibbetts, *et al.* 2012). However, by the mid-second millennium *al-Wāq Wāq* was less fantastical and more grounded on physical geography (Tibbetts, *et al.* 2012). Sailing merchants from the Middle East could have taken the tales of a wild, sparsely inhabited land filled with megafauna and *roc* birds to heart when navigating the coasts south of Kilwa (Hawkins and Goodman 2003). Perhaps the complexity and/or inconvenience of currents within the Mozambique Channel, when paired with superstition and the justified hesitance to settle a massive, mostly unknown island, home to Vazimba and potentially hostile Austronesian groups, could have contributed to the relative restriction of Islam to the coast of Madagascar. These factors would have surely been secondary to the presumed dependency of Islamic coastal nodes on Indian Ocean trade/resources, made evident in the case of Kingany by the near absence of regional subsidiary villages (Radimilahy and Crossland 2015: 504). So strong was this reliance that even those early Malagasy settlements in far southern *manda* towns of Androy were tied to navigable estuaries in the early centuries, presumably to maintain such ties (Parker Pearson, *et al.* 2010: 108).

5.E. Consideration of Ethnicity and Cultural Connections at Kingany

Articulation of Muslim lifeways in a decidedly distant outpost can be beneficially contextualised by investigating the groups potentially present. This attempt is largely derived from archaeological evidence recovered from Kingany Site II, interpreted in accordance with the oral tradition and early ethnographic data when available.

The first settlers at Kingany, appearing on the coast by the 11th century, were potentially non-Muslim foragers and universalists (Section 5.B.*I*). The exploitation of cattle and the manipulation of iron, evident from the earliest phase at Site II, conforms to East African, not Vazimba, lifeways, as outlined in Malagasy oral tradition (Bloch 1985: 642; Quintana Morales and Prendergast 2017: 341). Radimilahy (1998: 210) and Rakotozafy (1996) suggest that a markedly similar material profile found at Mahilaka belonged to an Austronesian migrant population. Similarly, the vast compendium of East Asian-inspired and imported grave goods at Vohémar has long been presented as evidence for a distinctly Asian population, referred to as the Rasikajy Civilisation, albeit not without justified controversy (Schreurs, *et al.* 2011; Zhao 2011). Therefore, it is possible that the first community at Kingany was similar, though there was little in the material assemblage to substantiate this. Presumably, the logical tracts taken to argue for an East Asian community at Vohémar works in the reverse. Archaeological materials from Kingany included few East Asian objects, inspired or otherwise, while possessing an African-like local ceramic and faunal profile. This could mean that Kingany was much more African than the contemporary site of Vohémar.

Changes in subsistence strategies and artefactual make-up at Kingany immediately leading up to and following the construction of the southern mosque mark the arrival of a new, partially Islamised, group (Section 5.B.*I*). The archaeological record, specifically that of the sondages, indicates that the incoming group did not wholly displace the foundational population, but appear to have instead cohabitated. Given that Islam is apparent by the 13th century, and was plausibly a component of the culture leading up to the construction of the southern mosque, it is possible that the new group was part of the Onjatsy, Zafiraminia, or even early Antalaotra ethnic migrations to Madagascar (Beaujard 2019b). While the Zafiraminia and the later highland-dwelling Merina are often associated with cattle-based agropastoralism in Madagascar, Boeni Bay oral tradition asserts that the first Islamic peoples were the African ancestors of the Kajemby, who sailed from Mozambique through the Comoros (Beaujard 2019$_b$: 591; Vérin 1986: 157). Interestingly, this origin myth is shared with the Antalaotra (Vérin 1986: 157). An African origin for western Malagasy populations was substantiated by Grandidier (*et al.* 1903: 21-22) who claimed that coastal western groups were late to adopt the Austronesian languages spoken throughout most the island, instead speaking Bantu dialects well into the 17th century (Dewar 2014: 48). Ultimately, the observed shift towards agropastoralism, adoption of Islamic practices, and embrace of coastal East African aesthetics marking the second group at Kingany could be evidence of a 12th century Bantu, Comorian, and/or Swahili migration to the Boeni Bay (Section 5.D).

While probably not part of the permanent community of Kingany, archaeological evidence recovered from Site II suggests the possibility that there were Arabs, particularly Yemenis, present (Section 5.B.*III*). The record of these seasonal inhabitants was not limited to imported goods, i.e. a Yemeni water-jar fragment, but included items potentially utilised by the merchants themselves, namely a potential tagine lid and colonoware incense burner (Figure 5.19) (Section 4.C.*II*) (Priestman 2011: 91, 93). Additionally, the tombstones Site I Tomb 12 and Site II Tomb 8, which marked the burials of two women, one freeborn (Section 5.B.*I*.b.*i*), drew inspiration from a number of Indian Ocean locales, including Yemen. It is plausible that these objects were purely the result of Indian-Ocean cultural exchanges, which undoubtedly occurred, but the possible presence of seasonal Arab traders at Kingany cannot be ruled out.

While it is difficult at this juncture to argue that the inhabitants of the Boeni Bay were as definably "Swahili" as the coastal mainland based purely on a relatively small set of material indicators, it is clear that past communities of the region shared important characteristics with their northern neighbours, be they architectural, artefactual, or spatial (Sections 5.B and 5.D). These associations can be readily inferred from historical references, e.g. Duarte Barbosa, to "considerable Muslim population[s]" of "Arabs" and "Moors" (Freeman-Grenville 1975: 130) within the northern Mozambique Channel, peoples inextricably tied to ocean-based trade, especially within an eastern African context (Newitt 1995: 189; Radimilahy 1998: 23-25). All data points to the presence of both groups, and possibly also Austronesians, during the Islamic period of Kingany. However, this hypothesis lacks the critical genetic data necessary to accurately examine the ethnic make-up of an ancient settlement, and is therefore tentative.

5.F. Conclusion

It is clear as a result of this research that Kingany and other Boeni Bay settlements were not isolated outposts, but were instead intimately linked to the western Indian Ocean and Swahili cultural complex much earlier and in a much greater manner than previously suspected. The results of the 2019 archaeological campaign at Kingany revealed a chronology hundreds of years longer than previously thought (cf. Vérin 1975a; Wright, *et al.* 1996). Radiocarbon-dated materials collected from TU1 corroborate and confirm data disregarded by previous studies of the site, defying long-held hypotheses regarding the peopling of Madagascar's western coast (Sections 3.C.*II*.b and 5.B). This deeper timeline and corresponding archaeological record present the possibility of multiple migrations and even an 11th century pre-Islamic community on the outskirts of Boeni Bay, a coastline once thought to be effectively uninhabited until the 14th century (Section 5.B) (Wright, *et al.* 1996: 51-52). From these discoveries the author determined that the foundational community at Kingany belonged to the Antetikala phase of northwestern Madagascar, marking the site as an early contemporary and cultural sibling to Mahilaka (Sections 4.C.*II*.a and 5.B.*I*.c.*ii.1*).

The archaeological assemblage of Site II displays linkages to other early-second millennium Malagasy settlements, such as Irodo, Mahilaka, and Vohémar, but was not simply repetitious of these locales in its composition. The decidedly Mahilaka-inspired pottery of the Antetikala foundational strata gave way to the Islamic, Kingany phase, ceramic tradition, which appears to have drawn from the Comorian Hanyundru series, coastal East African vessel morphologies, and possibly even Yemeni motif styles in addition to its northern, and potentially central, Malagasy contemporaries (Section 4.C) (Vérin 1986: 144; Wright 2017b: 279; Wright, *et al.* 1996: 47). Recovered trade goods, attributes of the stone architecture, and even the spatial arrangement of the site corroborate the typological similarities expressed in the local ceramics (Section 5.B). Thus, Kingany's Islamic phase, which began with the construction of the southern mosque, is characterised by an amalgam of its western Indian Ocean connections, cross-cultural exchanges reflected in the cultural debris.

Discernible Islamisation mechanisms for Boeni Bay are decidedly similar to those of the Comorian Archipelago and portions of the Swahili coast (Section 5.B.*III*). Muslim-dominated western Indian Ocean mercantile networks extended to Kingany by at least the 13th century, functioning along pathways equally utilised by northbound Malagasy trade ships (Beaujard 2019b: 381-382). The wealth of Kingany, much like Mahilaka, arose from its transshipment role, delivering raw materials, gum copal, rock crystal, finely worked products, chlorite schist, and enslaved peoples from the Malagasy hinterland and eastern coast into the monsoon networks (Section 4.C). Decades of habitual contact with, and likely temporary residence by, Muslim sailors, compounded by 12th-13th century southward migrations of Islamised peoples from the Shirazi towns of coastal East Africa, greatly affected the socio-cultural realities and identity of the settlement (Sections 5.D.*IV* and 5.E). Correspondingly, the relative site presence of the universalist first settlers diminished greatly, while material markers for Islamic cultural expression and Swahili-like lifeways grew (Section 5.B.*III*).

Chapter 6 will review the results of this thesis in relation to the research objectives (Section 1.C), propose future actions to better understand the arrival of Islam in Madagascar, and outline potential steps that can be taken to protect the cultural heritage.

Chapter 6. Conclusions

6.A. Introduction

This thesis has sought to examine the chronology, manifestations, and mechanisms of Islamisation as well as potential Indian Ocean entanglements and socio-cultural identity in the Mozambique Channel *circa* 1000-1500 AD. The detailed analysis of archaeological remains recorded at six case sites in northwestern Madagascar and northern Mozambique served as the primary data for this research, aided by supplementary ethnographic and historical accounts. Close consideration was not only given to exogenous, but also endogenous forces which could have influenced the settlements investigated, as deep-seated cultural, ideological, and material interconnectivity within the channel, which also demonstrably extended far into the Indian Ocean world, and existed long before the colonial period, starting in the 16th century. The implications of these findings are summarised here with regard to the research objectives outlined in Section 1.C.

6.B. Islam at Kingany

The first set of research objectives guiding this thesis focused on identifying concrete markers of Islamic practice at the case study locales. Site attributes were scrutinised both during the literature review and exploratory campaigns. This was followed by an investigation into whether observed Islamic practices were foundationally present, as Kingany had been suspected of succeeding the advent of Islam in Madagascar prior to this study (Section 5.B.*III*), or diagenetic products introduced to the community sometime later, a question explored primarily through archaeological excavation. The final query in the initial grouping of research questions, centered on localised forms of Islamic expression, was similarly examined.

6.B.*I*. Presence of Islam

The most persuasive evidence for Islam was the presence of a mosque or Islamic tombs at the sites in question. The locales chosen for investigation were initially vetted for their relevance prior to inspection. Therefore, nearly all archaeological sites visited for this study possessed conspicuous evidence of Islamic practice, the exceptions being Ibo and Quirimba islands (Sections 3.A.*I*.a and 3.B.*I*.d). This allowed for archaeological reconnaissance to focus instead on tentatively dating surface assemblages and discerning relative terminal chronologies so as to assess the origins of Islam in the locales studied. Kingany, which possessed two mosques, dozens of Islamic tombs, and plaques with Arabic epigraphy, was determined to be the ideal case study (Section 3.C.*I*.b).

6.B.*II*. Islamic Foundation or Islamisation

Subsurface investigation at Kingany Site II produced the principal dataset for this thesis. An examination of the southern mosque's sub-floor strata (Sections 3.C.*II*.b and 4.C.*II*.c) found no precursor structures despite clear evidence for local habitation prior to the stone construction. In the absence of previous mosques, other compelling markers of Islamic practice would have needed to have been found in these layers to evince local Muslim groups. Such markers did not manifest in any sub-mosque strata. Therefore, it is probable that Boeni Bay was first settled by non-Islamised peoples, partially corroborating regional oral traditions (Section 5.E) (Vérin 1986: 157).

This revelation means that Islamisation processes must have occurred at a subsequent point in the history of Kingany. Corresponding substantive socio-cultural changes must have preceded the 13th century erection of the southern mosque. Material variations visible in 12th century strata hinted at shifts in dietary preferences, most notably represented by a nearly site-wide decline in game species exploitation, possibly in observance of some *ḥalāl* foodways, and concurrent proliferation of open ceramic vessel types (Section 5.B.*III*), the latter of which fits Islamisation models utilised for parts of coastal East Africa (Boivin, *et al.* 2013: 251; Walshaw 2010: 151). At Kingany, there is the possibility that these changes in ceramic vessel morphology signify a reduction in alcohol consumption/fermentation, in accordance with general Islamic practice, and/or social dining traditions, and are therefore relevant to understanding social outcomes of local Islamisation, should such interpretations be accepted (Pawlowicz 2013: 393). Noted gradual dietary shifts, taking place over some 200 years, might reveal a local response to the increased presence of Islam within the region. Additionally, adjustments of dietary lifeways could have been component to larger social transitions, in this case reflective of a growing Muslim community that would have presumedly preceded the construction of the first stone mosque in the Boeni Bay.

It is important to note that the archaeological record does not recommend an immediate shift in lifeways. Rather, what was visible were subtle reactions to the Mozambique Channel's growing integration into Indian Ocean mercantile networks (Section 5.B). Archaeologically, this was seen as a proliferation of settlements with discernible access to trade routes and goods, small-scale migrations, evidenced by considerable local ceramic aesthetic and technological parallels with the Islamised Comorian Archipelago and Swahili cultural complex, as described in Section 6.C.*I*, and presumably some conversion made apparent by epigraphy at the site (Section 5.B.*III*).

Accordingly, the wholesale displacement of the first peoples, suspected to have been the universalists, defined here as foragers who practised some agropastoralism and selective exploitation of the nearshore, seen in earliest levels of Kingany, described in the oral traditions of the Antalaotra and Kajemby does not appear in the archaeological record (Section 5.E) (Vérin 1986: 157). Patterns observed in some spatially distinct sondage assemblages, i.e. that of the EOA, shared numerous similarities with the foundational strata of Site II (Section 5.B.*III*). The continuity implied by this data would suggest that the first settlers of Boeni Bay were not entirely supplanted during the migration events (Section 5.B.*I*.c). Given these finds, it might instead be the case that the Antalaotra and Kajemby narratives recount broader cultural shifts occurring in the period and not necessarily the literal growth of a monoculture.

6.B.*III.* Islamic Expression

Identification of syncretic practices, or peculiarities of indigenised Islamic lifeways, within the Mozambique Channel was important to this study. Exclusively archaeological examples were not forthcoming, but multiple instances of specific present-day Muslim interactions with historic mosques and tombs were noted.

A common interaction observed at Islamic sites during this study was the leaving of items at places of religious significance. Offerings, observed as candles, incense, perishables and corresponding ceramic or glass containers, and money were encountered during both the Mozambican and Malagasy legs of the field campaigns (Sections 3.B.*I* and 3.C.*I*). Such offerings were observed in the *miḥrāb* of the Matemo mosque and at two tombs, specifically the “Princess’s grave” in M’buizi 1 and the pillar tomb at Kingany, Site III Tomb 3. In the Mozambican examples, the present populations assert direct heritage with the past inhabitants of the surrounding ruins, so such offerings, in addition to being reverential treatment of locally significant places, invoke comparisons to ancestor veneration, in addition to patently Muslim pleas for intercession and/or access to *baraka* (Gensheimer 2012: 109).

The situation at Kingany differs from the Cabo Delgado cases in that the Betsirebaka and Sakalava residents of Morafeno do not necessarily claim to share ancestral linkages to the archaeological ruins in their village (Section 3.A.*I*.b). Interestingly, oral tradition simultaneously associates Kingany’s pillar tomb with aspirational figures in local histories, be it the pioneering Kambamba or the Sultan Manafy, and as residence to a *jinn* (Section 5.B.*I*.b). Perhaps the potential ethno-cultural and chronological disconnects between the builders of Kingany and the inheritors now living in Morafeno have produced this duality. In this scenario, the paper currency placed at the base of the pillar could be intended as a negotiation with those unknown and potential hostile peoples whose lands now belong to Morafeno, represented by the *jinn*, and veneration of individuals important to the wider Islamic culture of northwestern Madagascar. Such a practice, implemented in this instance to fit local Muslim needs, can be both understood as being at odds with some *ḥadīth* and in alignment with vernacular Islamic cosmologies present in coastal East Africa since at least the 13th century (Baumanova 2018: 394; Gensheimer 2012: 109).

From observations made during the course of this study, it would seem that compromise is central to the conceptualisation of Malagasy Islam. This was apparent in archaeological contexts, namely the burial at Kingany excavated by Vérin (1975$_a$: 332-334) which revealed a seemingly intentional adjustment to traditional Muslim burial practice to have the interred fulfil both expectations of *qibla* orientation and the supine positioning recurrent in some northern Malagasy customs (Section 5.B.*I*.b), and in present-day life, e.g. the description of local Islam provided by the Imam of Mahilaka (Section 3.C.*I*.c).

6.C. Boeni Bay and the Western Indian Ocean

With archaeological markers of Islam ascertained and contextualised with regard to local chronological sequences, the research focus shifted from Boeni Bay. The second set of research objectives sought to link Kingany, and the Islamisation processes identified therein, with wider phenomena in the western Indian Ocean.

6.C.*I*. Mozambique Channel Connections

While few salient markers for long-distance trade relations were identified in the Kingany assemblage, what was found not only indicated potentially centuries of maritime interactions between approximately the 13th century until its 15th century decline, but closely aligned with contemporary urban Malagasy settlements like Mahilaka (Pollard and Kinyera 2017: 927; Radimilahy 1998). Approximately 2% of artefacts from Kingany were imported, trade ceramics, e.g. monochrome green-glazed ware, "blue-speckled" ware, Yemeni water-jars, Longquan celadon, white ware, Martaban storage vessel, and beads, with such finds primarily sourced from the Arabian Peninsula and Eastern Asia (Section 4.C.*II*). When contextualised chronologically, it is clear that long-distance exchanges accelerated in the 13th-14th centuries, to which nearly two-thirds of Site II imported goods belonged (Section 5.B.*I*.a).

Archaeological evidence suggests that Kingany acted as the principal transshipment hub for the Boeni Bay and its surrounding hinterland (Section 5.F). Kingany's outputs, which were partially acquired via internal Malagasy trade, would have included historically attested goods such as gum copal, elephant bird eggs and feathers, lumber, and textiles, as well as archaeologically observed materials, such as giant clam shell, rock crystal, and chlorite schist, in addition to enslaved peoples (Sections 4.C and 5.B.*III*). It is probable that merchants from Kingany directly traded at Swahili or even Middle Eastern markets, such as Aden, which would account for the site's possible record as Anāmil in Aḥmad ibn Mājid's 15th century *Ḥāwiya* and the conspicuous quantity of Hadhramauti-like ceramics in Site II (Section 5.B.*III*)

(Beaujard 2019b: 570; Viré and Hébert 1987: 76). However, there is currently insufficient material evidence to confidently claim direct Malagasy trade to the Hadhramaut and the larger Middle East (Radimilahy 2017: 289). Given their proximity, it is likely that the focus of Kingany's mercantile traffic was to the Comorian and Kilwa archipelagos.

Comparative analysis of artefacts collected from units in Kingany Site II determined predictably strong typological connections to local series, the Antetikala, 12th-14th centuries, Mahilaka, 11th-15th centuries, and Kingany, 14th-16th centuries, but also to the Comorian Hanyundru type, 11th-13th centuries (Section 4.C.*II*). In fact, key components of local typologies shared strong aesthetic and morphological likenesses with their roughly contemporary Comorian neighbours, examples of which include repeating dentate motifs and globular "hole-mouth" jars/closed bowls (Andrianaivoarivony 2011: 343; Horton and Chami 2017: 143; Wright, *et al.* 1996: 46, 51). These findings corroborate oral and written histories that relate close linkages between the Malagasy north and the Comorian Archipelago (Section 5.C.*I*).

Conversely, material evidence for connections between Boeni Bay and Mozambique were more elusive. That said, morphological ratios of locally produced carinated ceramics from Kingany, 9% of identifiable vessel shapes from Site II, were more akin to the 13th-15th centuries Mozambican Lumbo series, wherein respective assemblages contained 11% carinated vessels on average, than to any other coastal East African contemporary (Section 4.C.*II*.d.*i*). Similarly, although not entirely evocative of direct interconnection, a number of Khami Indo-Pacific beads from Site II were reminiscent of specimens from the later occupational strata of Chibuene (Section 4.C.*II*.c.*iii*) (Wood, Dussubieux, and Robertshaw 2012: 68). It seems probable, given the proximity of known Islamic sites, their shared architectural tradition (Section 5.D.*I*), and their interlaced oral histories, some of which recount migration events, i.e. coastal Mozambique to Boeni Bay in the case of the Kajemby, that cross-channel interactions were commonplace in the precolonial period (Beaujard 2019b: 591; Vérin 1986: 157). However, archaeological studies in the channel have identified stronger connections between the Islamic settlement chronologies and Islamisation mechanisms of the Comorian Archipelago and northwestern Madagascar, and by extension Boeni Bay, than either of the former to the Mozambican coast in the early-second millennium (Sections 5.B.*III* and 5.D.*III*). Ultimately, these hypotheses are predicated on the current state of scholarship in the Mozambique Channel. Historic linkages within the region should become less opaque as the field develops.

6.C.*II*. Boeni Bay and the Swahili

This study encountered a plethora of material commonalities which suggest that, much like the urban settlements of the Comorian Archipelago, Kingany and the Boeni Bay were a southern component of the larger Swahili cultural complex (Section 5.D). Kingany entered into Indian Ocean trading spheres and began Islamising by at least the 12th century, with Islam confidently recognisable in the archaeological record by the 13th century, as represented by the construction of the southern mosque (5.B.*III*). This chronology correlates with the spread of the Shirazi tradition which is thought to have expanded progressively southward from the Lamu archipelago between the 10th and 13th centuries (Beaujard 2017: 371; Horton 2017b: 489).

The most prominent manifestations of cultural continuity appear as a shared architectural tradition (Section 5.D.*I*). The architecture at Kingany varies considerably from older Malagasy urban settlements, like Mahilaka, roughly 10th-15th centuries, in form and construction, instead following the quintessential Shirazi style of mosques and hall-like residences (Sections 5.B.*I*.a and 5.D.*I*) (Beaujard 2019b: 139; Fleisher, *et al.* 2015: 107; Horton 2017b: 490). The arrangement of this architecture also exhibits close interrelations to coastal East African contemporaries on a macro-scale (Section 5.D.*II*), namely in the manner by which settlement ordering focused societal life towards a religious, Islamic centre, even when viewed from afar (Fleisher, *et al.* 2015: 107). This town planning effectively imbued spaces with a spiritual gradient, radiating from mosque *qiblas*, creating a somewhat predictable prioritisation of usage in the sense that zones north of *miḥrāb*s would contain graves and mosques would be visible from the sea (Fleisher and Wynne-Jones 2012: 178).

Less tangible, but nonetheless important, evidence for inclusion of the Boeni Bay in the Swahili cultural sphere includes regional oral traditions (Section 5.D).

Those Comorian histories that list the Boeni Bay in their own foundational Shirazi trajectories should be understood as purposeful inclusions into self-reflective social conceptualisations that reflect real shared heritage and substantial historical linkages (Adamowicz 2012: 13; Fontoynont and Raomandahy 1937: 12).

It must be emphasised that the archaeological assemblage of Kingany does not recommend a local reproduction of mainland Swahili culture in the Islamic period. The material signature of the first settlers, whose ethno-culture affiliation can only be speculated upon, were present in some terminal contexts of Site II, and were therefore affected by, and likely active in, the gradual adjustment of lifeways tied to Islamisation occurring at the settlement (Section 5.B.*III*). Additionally, much like contemporary Swahili and Comorian entrepôts, the Boeni Bay was potentially subject to seasonal stays by Arab, Indian, Persian, and South African merchants, visitations of unknown frequency, certainly affecting the social environment (Section 6.C.*III*).

6.C.*III*. Boeni Bay and the Islamic World

Kingany was undoubtedly most intimately connected with its immediate Muslim neighbours, be they the residents of the urban settlements of the Malagasy north, namely Mahilaka and Vohémar (Section 5.B.*II*), the Comorian port towns (Section 5.C), or Swahili coastal cities (Section 5.D). However, Kingany was also engaged in the wider Islamic world by virtue of its mercantile ties to the western Indian Ocean and the cosmopolitan composition of its inhabitants recommended by archaeological and historical records, specifically those by Aḥmad ibn Mājid (Section 5.B.*III*), as already described (Beaujard 2019$_b$: 570; Viré and Hébert 1987: 76). Pan-Indian Ocean exchanges occurring at Kingany resulted in the adoption and adaptation of some non-local practices and material culture into the regional milieu, best exemplified by the proliferation of open ceramic vessels, use of Arabic text, and presence of Indian iconography in the later occupational strata at Site II (Section 5.B.*I*). Archaeological finds of locally made colonoware products might also directly evidence this selective incorporation (Section 4.C.*II*).

One of the largest stone buildings recorded at Kingany was, according to local tradition, a *madrasa* (Section 3.C.*I*.b). This monumental structure, which could have been constructed as early as the 14th century based on its relationship to the northern mosque, might indicate a past effort to promote formal Islamic learning, perhaps as a regional destination for such knowledge (Section 5.B.*I*.a). These efforts might have been similar to what eventually manifested on Nzwani (Section 2.D.*I*). It is reasonable to suspect that the northern mosque and the *madrasa* were conceived to intentionally aggrandise Kingany through their size and, in the case of the mosque, positioning (Fleisher, *et al.* 2015: 107). Such highly visible testaments to the local embrace of Islam were surely the result of Kingany's engagement in the Islamic world in the *longue durée*.

6.D. Extrapolating Observations from Kingany

The final set of research objectives further compared the material culture of Kingany with regional cultural spheres for which evidence of interaction was observed. These questions sought to ensure that the interpretative output of this thesis would be relevant to Indian Ocean world scholarship at a larger scale.

6.D.*I*. Islam and Islamisation in the Mozambique Channel

The results from Kingany generally bolster previously recommended Islamisation timelines for northern Madagascar, derived primarily from the occupational phases of Mahilaka, while simultaneously pushing the chronology of urban southward expansion further into the past (Sections 5.B.*II* and 5.B.*III*). Mahilaka remains the earliest known Islamic settlement in Madagascar, with proof of practice identifiable by at least the 11th century (Section 2.E.*III*.a) (Radimilahy 2017: 287). That said, Kingany appears to also have belonged to this early phase of Malagasy Islam. Kingany's southern mosque was built by the 13th century, a construction preceded by more than a century of transitions that affected local lifeways. Notable changes included a decline in terrestrial universalist strategies of the first settlers of Boeni Bay in favour of an ocean-focused society (Section 5.B.*I*.a). The earliest occupational contexts observed at Kingany Site II displayed remarkable similarity to those of Mahilaka, feasibly evincing a direct link between the two settlements. However, it is important to reiterate that the complete absence of identifiable material markers of Islamic practice prior to the southern mosque would suggest that the first settlers of

Kingany, despite possessing probable familial ties to the Islamised Ampasindava Bay, were not entirely Muslim.

Broad compositional shifts observed in the artefactual record of Kingany Site II, which occurred primarily between the foundational strata and the immediate sub-mosque contexts (Section 5.B.*I*.c.*ii.1*), were interpreted as localised responses to increased maritime activity and corresponding intercultural exchange (Section 6.B.*II*). Ultimately, these changes were understood as being markers of Islamisation, and those stimuli, which were inherently bound to Indian Ocean trade, relative ease of access in the Mozambique Channel, and population movements, were the foremost mechanisms at play not only in Boeni Bay, but likely also the wider region (Section 5.F). Importantly, this sequence transpired subsequent to the rise of the Islamic ports of the Comorian Archipelago, which had shared close ties to the proto-Swahili groups of mainland Africa, but predated the advent of Islam on the Mozambican coast in almost all cases (Section 5.C.*II*) (Dickinson 1975: 84; Horton and Chami 2017: 142; Sinclair 1987).

What at first glance might appear to be a sporadic trajectory, this relative Islamisation chronology fits solidly with popular archaeological theories of the spread of Islam elsewhere in coastal East Africa (Horton and Chami 2017: 143). A prominent trait shared by the earliest Islamic sites of the Mozambique Channel, i.e. Chibuene, Mahilaka, and Sima, was their well attested roles as transshipment hubs (Radimilahy 1998; Wood, Dussubieux, and Robertshaw 2012; Wright 1992). Kingany, though probably Islamised during a subsequent, and more multifaceted, wave of Islamisation, enjoyed Indian Ocean access comparable to Mahilaka or Sima, having occupied a niche similar to those towns for western Madagascar (Section 5.F). It is arguable that exposure to Islam in the Mozambique Channel was almost entirely determined by community access to western Indian Ocean trade prior to the Shirazi expansion of the early-second millennium (Horton 2017$_b$: 489; Radimilahy and Crossland 2015: 499, 504). Migration of small Islamised African groups and individual conversions occurred shortly after this initial dissemination, evidenced by the grave at Nyamawi (Section 2.D.*II*.c), greatly contributing to the gradual spread of Islamic practice to much of the Mozambique Channel's coastal regions.

6.D.*II*. Implications of Findings to Madagascar and the Western Indian Ocean

This thesis has uncovered a considerable timeline of habitation for the Bay of Boeni, with evidence for settlements by at least the 11th century as opposed to the previously postulated 14th century, and an archaeological record that would suggest multiple migration events to the region, potentially by early Comorian, Malagasy Austronesians, and/or Bantu African/Swahili groups, preceding the Islamic period at Kingany (Section 5.B). The ceramic typologies present in northwest Madagascar in the early-second millennium, i.e. the Antetikala, Irodo, Kingany, and Mahilaka series, exhibit tangible markers of these movements with considerable parallels to Comorian types. Despite these collections generally lacking the motifs which developed from TIW and later traditions of the coastal Swahili (Figure 1.4), the finds from Kingany proved to be notably reminiscent, morphologically and technologically, of pottery produced from Mozambique to Kenya (Section 4.C.*II*) (Horton and Chami 2017: 142). Later, potential Yemeni influence on the material culture of Kingany was also detectable (Section 5.B.*II)*, though it remains unclear what factors brought about the artefacts, i.e. water-jar and incense burner fragments, in question. Ultimately, it would appear that this amalgam of western Indian Ocean elements crystalised in the Islamic period, *circa* 14th century, becoming the aptly named Kingany Phase (Vérin 1975$_a$). Despite the diverse inputs contributing to Boeni Bay society, the resulting patterns of lifeways detectable at Kingany are strikingly similar to those of the Comorian Archipelago and portions of the Swahili coast, as previously discussed at length (Section 5.B.*III*).

The archaeological assemblage of Kingany Site II was comparable to all occupational phases of the coeval Malagasy cities of Mahilaka and Vohémar (Section 5.B.*II*). While it is probable that ports like Kingany and Mahilaka acted as the southern terminus of the cosmopolitan Swahili cultural complex, the early Malagasy were also very much developing into their own cultural entity, one not simply defined by external influences, even in this early period. This was partially exemplified by locally produced ceramic styles at Kingany (Section 4.C.*II*.d.*i*). Malagasy coastal entrepôts represented more than their immediate surroundings, as a significant number of interior villages supplied the goods leaving these ports for

Indian Ocean markets. Gradients of interplay formed, possibly originally decided along ethnic lines, as still is the case in parts of southern Madagascar, eventually giving way to socio-political divisions and other factors as centuries of micro-migration events and localised cultural synthesis gradually blurred more traditional boundaries (Section 5.E) (Griffin 2009). Over time the first Austronesian peoples migrated inland, or possibly became semi-nomadic in the case of some Vazimba lines, while later Muslim migrations largely settled the coast, something that is reflected in the historically limited extent by which Islam penetrated into Madagascar's interior, yet the archaeological record and modern genetics show that these groups interacted extensively (Capredon, *et al.* 2013; Radimilahy and Crossland 2015: 504-505). Consequently, interrelations between Malagasy settlements were varied and fluid both in respect to each other and the greater Sub-Saharan African and Indian Ocean worlds (Beaujard 2019$_b$).

Thus, it can be said that a shifting gradient of connectivity and influence between cultural spheres in Madagascar, responsive to the centuries of dynamic population and ideological intermixing occurring therein, existed long before the colonial period with Islamic practice functioning as a social emulsifier for coastal groups. Perhaps such a model could operate as a useful conceptual framing for visualising past societies in other regions of the Mozambique Channel, portions of coastal East Africa, or similarly diverse Islamic frontiers.

6.E. Threatened Cultural Heritage

Finally, it is necessary to contextualise the archaeological remains of this study in relation to their present situation. Throughout the course of field research for this thesis, the destruction of cultural heritage was observed by the author on a number of occasions. Instances of destruction were encountered with greater frequency in Mozambique than in Madagascar. In Cabo Delgado, architectural remains at archaeological sites were targeted by local communities for spolia (Section 3.B.*I*.d), by opportunistic looters (Section 3.B.*II*.a), and by Islamist extremists (Anderson 2019). Matemo, an acute example, was partially integrated into tourist infrastructure in a manner clearly intended to encourage visitations to the unprotected ruins

(Section 3.B.*I*.b). This likely resulted in the depletion of the surface level artefact assemblages.

The ravaging of cultural heritage in northern Mozambique in recent years has not been strictly limited to the tangible. The extremist group, *Ahlu Sunnah Wa-Jama* (Adepts of the Prophetic Tradition), now affiliated with the Islamic State of Iraq and the Levant (ISIL), who were responsible for the vandalism of the Matemo mosque (Anderson 2019: 75), have murdered and displaced thousands of people in Cabo Delgado, including elders and local leaders (BBC.co.uk 2018; 2021). Such individuals are crucial to the maintenance and propagation of local social memory and frequently act as stewards to surrounding archaeological remains. Thus, the loss of local elders is made even more tragic by the associated jeopardisation of cultural heritage and indigenous histories.

In Madagascar, the situation differs (cf. Evers and Seagle 2012). The circumstances threatening archaeological remains at Kingany are comparatively more benign in their intent but no less destructive. The rapid expansion of Morafeno village has resulted in local deforestation and damage to the fragile archaeological architecture (Section 3.A.*I*.b). Many of the residents of Morafeno proudly claim ownership of the Kingany ruins, acting as guides and protectors. However, this sentiment is held by a decreasing minority as the village creeps further inland and demands for lumber and charcoal increase (Figure 3.4).

While it is outside the purview of this thesis to offer exact solutions or legal pathways forward, it is imperative that protective schemes organised in partnership with regional heritage offices and local stakeholders be implemented before the already vulnerable Islamic cultural heritage of the Mozambique Channel disappears altogether. It is possible that conservation costs in Madagascar could be offset by funds garnered from increased cultural tourism initiatives, which might also benefit local economies and reinforce community stewardship of archaeological remains. This strategy could be executed in a manner similar to that previously proposed by Durbin and Ralambo (1994) wherein local communities would be active in national park maintenance, gain access to resources, and benefit from any resulting profits. While the situation in northern Mozambique precludes the enactment of protective strategies presently, theoretically a similar community focused approach in which conservation and protection of cultural heritage by local stakeholders is monetarily rewarded using tourism profits could be successful.

6.F. Final Conclusions

This study has further developed the current understanding of Islam, the modes and timeframe of its arrival, and the stimuli of its propagation, in the Mozambique Channel between the 11th and 16th centuries. The archaeological investigations undertaken as part of this research involved the reevaluation of a number of previously recorded sites. A recurring issue throughout the course of this research was the general lack of reliable published data for archaeological sites in the Mozambique Channel (Chapter 2). Of the sites discussed within this study, most have received only preliminary surface level examinations, and are tentatively dated as a result. In the case of Kingany, analysis completed as part of this thesis shifted the attestable occupational chronology for the site back multiple centuries (Section 5.B.*III*). While a handful of ongoing projects in the Comorian Archipelago and in northeastern Madagascar are rectifying this (e.g. Pauly 2017; Serneels, *et al.* 2017), there remains considerable untouched areas, particularly in northern Mozambique as a result of inaccessibility and the renewed conflict (Sections 2.D and 2.E). When possible, research on locales like Langany, Matemo, Nosy Makamby, and the Tungi complex would benefit greatly from renewed archaeological inquiry. While studies at the Mozambican sites will only be possible if the situation in Cabo Delgado is ameliorated (Section 6.E), there currently exist no such hurdles blocking investigation of the Malagasy locales, other than interest. This thesis has shown that more archaeological research is required at precolonial sites in the Mozambique Channel to better understand the development of Islamic societies in frontier spaces and to fully situate the region in the wider Islamic and Indian Ocean worlds.

6.F.*I.* Return to Material Theory

As the remains of a colonial and cosmopolitan entrepôt, which housed diverse Indian Ocean inputs, the archaeological record of Kingany, especially that of the local Islamic phase, is naturally reflective of the complex milieu of its past. It is through the artefacts and their constructed contexts that glimpses of the social realities of

Kingany's inhabitants were detectable. Lifeways present at the height of Site II, inferenced from tangible markers, evidence the adoption, adaptation, and aggregation of attributes garnered from centuries of cross-cultural exchanges and makes apparent the belief system and possibly even the heritage of the past community (Sections 5.C and 5.E). This occurrence was unsurprising as materiality theory (Section 1.D.*II*) anticipates such preservation of meaning in archaeological debris, as all objects are tightly entangled within the environment of their creation and use (Gell 1992; Hodder 2011: 155; Wynne-Jones 2016: 5).

The transmission of material culture, beliefs, and people observable in the archaeological record of Kingany evidence wide-ranging Indian Ocean entanglements (Section 5.C). Inspecting modes of transmission via Ian Hodder's Darwinian, selective pressure perspective it can be argued that it is principally through human-thing entanglements that cultural features are fostered or abandoned (2011: 154). As Hodder has neatly summarised, "[h]umans actively transform things as part of social strategies… [what] they do or do not imitate depends on the ways in which humans and things are embedded within entanglements" (2011: 167). The western Indian Ocean system involved diverse actors navigating a patchwork of spheres of influence which saw variance in trade preference, tariffs, and hostility (Hawkes and Wynne-Jones 2015). Considering the magnitude of distance and time investment, paired with the intrinsic danger and uncertainty of such ventures, participants would have attempted to mitigate all other potential risk. With this in mind, those settlements which did not possess the gravitational attraction of the likes of Aden, Lamu, or Kilwa likely have had to adapt to survive (Hodder 2011: 166).

Once long-distance trade was established, or likely inherited in the case of the Boeni Bay (Section 5.C.*II*), Kingany became entrapped by obligations to maintain such bounds. These commitments took the form of wholesale societal transformation, including, but not limited to, dietary alterations and spatial reprioritisation (Section 5.B.*III*), patterned in a manner observed elsewhere on the Swahili Coast (Section 5.D) (Fleisher, *et al.* 2015: 107-109). The adoption of Islam, and the socio-cultural entanglements component to the faith in the coastal East Africa of the early second millennium, was potentially part of this. Therefore, the processes of Islamising might have been intentional efforts by the community of Kingany to increase their mercantile success, gaining access to networks containing more plentiful and lucrative trade partners, and thus bolstering the survival chances of the settlement and its dependencies. However, communities rarely act so one-dimensionally. Such economic impetuses were almost certainly enacted in tandem with a broad range of biased transmission stimuli, including tradition preservation, and more individual-level prestige building and technological preference (Hodder 2011: 166).

Archaeology can detect Islamic practice through collections of material (Insoll 1999: 13), and Islamisation can be inferred from the presence or absence and change in grandeur, positioning, power, and quantity of these Islamic markers through space and time (Section 2.B.*III*). Because of this, Islamisation is measurable through things and their materiality.

6.F.*II*. Summary of Results

In conclusion, the archaeological campaigns at Kingany and in Cabo Delgado produced material indicators of Islamisation from between the 13th and 15th centuries, respectively, the interpretation of which enabled the establishment of a comparative chronology for the Mozambique Channel at large. The presence of past Islamic communities is confidently detectable as mosques, Muslim tombs, Arabic epigraphy, and to a lesser degree, as specific portable material culture and dietary debris. Observations gathered on Cape Delgado and in the southern Quirimbas Archipelago found little to link the locales to the early expansion of Islam into the region, as the sites visited primarily belonged to the 15th century or early colonial period, i.e. after the 16th century Portuguese acquisition of Ilha de Moçambique and Sofala (Section 4.B) (Newitt 1995). Conversely, the Islamisation chronology for Kingany identified the Boeni Bay as component to larger southward trending dispersion phenomena which began in the early-second millennium, a cultural-ideological diffusion possibly preserved in the shared Shirazi narratives of coastal Eastern Africa (Horton 2017a: 218).

Islam was propagated in the Boeni Bay via multiple Islamisation mechanisms which included centuries of interconnected and disparate micro-migration events from Mahilaka, the Comorian Archipelago, and coastal East Africa partnered with individual conversions instigated in part by *longue durée* engagement within Indian Ocean mercantile spheres (Section 5.B.*III*). As a result, the town of Kingany was cosmopolitan, not unlike its contemporaries at Mahilaka and Vohémar, displaying a distinctly Swahili-like Islamic practice by at least the 13th century. The seeming co-habitation of the settlement by diverse groups of Muslims and non-Muslims was in stark contrast to a number of contemporaries on the southeastern coast of the island where the archaeology corroborates oral histories depicting periods of conflict associated with the arrival of Islam (Griffin 2009). Such localised responses to Islam highlight the multitude of groups and lifeways present on Madagascar in the early-second millennium. This interpretation challenges broad-brush narratives (Boivin, *et al.* 2013: 251-252) previously envisioned for the Mozambique Channel as the archaeology of the region reveals that the circumstances of Islamisation differed regionally in chronology and manifestation. Furthermore, economic, natural, and social-cultural factors permitted Islam to thrive in northwestern Madagascar shortly after the faith gained a foothold in the Comorian Archipelago, centuries before similarly sized Muslim communities grew in northern Mozambique. The processes charted in this thesis led to the development of the varied and dynamic Islamic communities scattered throughout the Mozambique Channel today.

Appendix I: Rapport Perles – Bako Rasoarifetra

Note: Original text formatted to fit thesis guidelines.

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Essai d'interprétation des perles archéologiques Kingany 2 (campagne 2019)

Le rapport de fouilles archéologiques entreprises par Pierre Verin[1] dans le site de Kingany révèle que les perles en verre sont rares: juste deux perles une en forme annelée de couleur verte opaque et un chaton de bague carré ont été répertoriées. Pour cette nouvelle campagne, le corpus est composé de 118 perles reparties comme suit:

Contexte	Nombre
PU1	40
PU2	64
PP	14
Total	118

A) L'étude de la matière et la qualité du verre

Le verre est la matière première prédominante dans les trois contextes soit 90, 6 % de la totalité des perles. Les études antérieures[2] sur les perles de la région nord de Madagascar ont montré qu'aucun gisement de sable de verre,

[1]. Pierre Vérin (1975) °*Les Echelles anciennes du commerce sur les côtes Nord de Madagascar*. 2 vol.

Service de Reproduction des Thèses. Lille. 1028 p.

[2]

matière nécessaire à la fabrication du verre, n'a été reconnu dans cette région. On peut déjà avancer que ces sont des objets d'importation; d'ailleurs aucun de tesson de verre n'a été découvert pour avancer l'hypothèse de récupération de matière première pour confectionner des perles comme cela a été le cas de quelques perles en verre de Mahilaka[3]. L'observation au microscope des perles révèle qu'elles sont fabriquées dans une pâte de verre opaque mais aussi en verre translucide (en proportion égale), le verre transparent est rare.

Contexte	Verre	Argile ?	Corail/Coquillage
PU1	34	04	02
PU2	59	01	04
PP	14		
Total	107	05	06

Six perles en coquillage sont également répertoriées dans le lot. Ce type de perles est plutôt présent dans les sépultures de Vohemar, ceci fera l'objet d'un autre commentaire.

B) Les différentes catégories de forme et la technique de fabrication

Nous avons adopté la terminologie employée par Beck[4] (1928) et reprise par Dubin[5] (1988) pour la description de la forme des perles. Les perles de Kingany 2 se retrouvent dans la première catégorie correspondant aux formes les plus simples: annulaire, disque –circulaire, sphérique-aplatie, sphérique, tonnelet, cylindrique, tubulaire avec une forte proportion de 71, 2 % perles sphériques-aplaties.

[3] RASOARIFETRA, B. (2000), *Contribution à l'étude des perles des sites archéologiques du deuxième millénaire AD, Nord de Madagascar*. Faculté de Lettres et Sciences Humaines, Département de Civilisations, Université d'Antananarivo

[4] BECK H. C. (1928) – Classification and Nomenclature of Beads and Pendants. *Archaeologia*, 77: 1-76.

[5] DUBIN, L. S. (1988). *Histoire des perles de la préhistoire à nos jours*. Editions Nathan, Paris, 364 p.

Contexte	annulaire	sphérique	sphe- aplatie[6]	disque - circulaire	tonnelet	tubulaire	débris	total
TU1	5	5	27	1	2			40
TU2	6		50	3	1	4		64
PP	1		7	2	2	1	1	14
Total	12	5	84	6	5	5	1	118

On reconnait à travers ces formes simples la technique du verre étiré permettant de former dans un temps très court plusieurs perles presque identiques; le tube de verre préformé est ensuite découpé et réchauffé donnant des formes plus ou moins irrégulières aux perles.

En outre, cinq perles de couleur noire sont de facture enroulée; c'est la technique la plus ancienne et la plus simple pour fabriquer des perles en verre. Les baguettes de verre amolli sont enroulées autour d'un fil ou d'une tige métallique, généralement cette technique donne la forme de tonnelet aux perles. On peut interpréter que cette technique a été déjà abandonnée quand le site de Kingany a commencé à être occupé.

C) Les tailles

Nous avons pris comme références la classification des tailles des perles des sites du Nord de Madagascar en cinq catégories:

-Taille A le diamètre varie de 1,2 mm à 2mm; les perles de cette grandeur sont classées parmi les perles minuscules ”

- Taille B, le diamètre varie entre 2 mm à 3,5 mm et détermine les perles de petite taille,
- Taille C, de diamètre 3,5 mm à 5mm, contient les perles de taille moyenne
- Taille D, de diamètre 5mm à 9,9 mm distingue les perles de grande taille
- Taille E, de diamètre de plus de 10mm est spécifique aux perles de grosse taille

[6] Spérique - aplatie

Le tableau montre que les perles restent dans les trois premières catégories de taille avec un léger surplus pour B (petite taille).

Contexte	A	B	C	D	Indéterminée	Total
TU1	15	8	11	6		40
TU2	17	29	12	6		64
PP	2	2	8	1	1	14
Total	34	39	31	13	1	118

D) Les couleurs

Contexte	rouge - indien	brun	bleu	blanc	vert	jaune	orange	vert	jaune	blanc	noir	bleu	Total
	opaque	opaque	translu	opaque	translu	translu		bouteille	opaque	transpa		translu	
TU1	17	5	4	2	2	3	3	3	1				40
TU2	15	1	8	2	9	8	0	2	2	1	15	1	64
PP	1	0	3	0	4	3	0	0	0	0	3	0	14
TOTAL	33	6	15	4	15	14	3	5	3	1	18	1	118

Dans ce corpus huit couleurs sont identifiées dont: le rouge – indien, le brun, le bleu, le blanc, le vert, le jaune, l'orange et le noir. Les nuances de couleur opaque, translucide ou transparent proviennent de la qualité du verre et le degré de la chaleur avec laquelle il est travaillé. Les perles de couleur rouge - indien constituent les 30 % de l'ensemble; cette caractéristique entre dans les commentaires

Commentaires

Les perles de Kingany 2 font partie intégrante des produits véhiculés par le commerce du Sud-Ouest de l'océan Indien propice dès le 9ème et perduré jusqu'au 19ème siècle. Toutes les caractéristiques observées sur ces perles les classent dans la catégorie des «trade-wind beads» ou «les perles de mousson » [7] provenant de l'Inde et de l'Asie du Sud – Est connues aussi sous l'appellation « perles indo-pacifiques ». Elles sont également le témoin de la culture matérielle héritée de ce

[7] Les bateaux venant d'Arabie et du nord -ouest de l'Inde ont traversé la mer en profitant du régime alternatif des moussons, qui pendant environ la moitié de l'année soufflent du Sud-Ouest et pendant quatres mois du Nord-Est. Et c'est par cette voie maritime que s'étaient repandues les petites perles de verre opaque appellées "perles de moussons".

trafic commercial nourri par les Arabo- Persans et les Islamisés elles sont associées à de la poterie d'importation.

Les caractéristiques sont:

- La présence des perles rouge indien (monochrome et opaque) à petite taille et aux formes simples

- La majorité des perles fabriquées par la technique de verre en tube ou verre étiré, et donnant les formes les plus simples évoquées plus haut. Cette technique a pris de l'essor dès le 12ème siècle supplantant la technique du verre enroulé; cette dernière est d'ailleurs observée dans les collections Kingany 2, les perles enroulées en effet sont rares.

- Les mêmes caractéristiques sont observées dans les collections de Vohemar (les perles de sépulture) où les perles monochrome de couleur rouge – indien dominent avec celles de la couleur bleue et verte. Il faut rappeler que la période d'occupation de Vohémar est estimée entre le 13ème et 15ème siècle. On peut avancer l'hypothèse de la contemporanéité de ces deux sites.

- Ces mêmes caractéristiques sont également relevées dans les perles en verre de la phase d'occupation du site de Mahilaka[8] dans baie d'Ampasindava où les petites perles de formes simples de couleur bleue et verte sont en nombre entre le 12ème et le 15ème siècle

- L'existence des perles en coquillage de forme disque-circulaire de couleur blanche opaque est relevée également par P. Vérin dans le site de la maison de Kingany (chantier de 1970). Il interprète la rareté des perles en verre dans son site par la présence des perles en coquillage achanti (en très mauvais état de conservation). Or dans les sépultures de Vohemar elles sont bien associées aux perles de verre même si celles- ci sont plus nombreuses; Chittik [9] avance que ces perles en coquillage sont présentes sur les principaux sites swahili de la côte – est africaine dès le 9ème.

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[8] RADIMILAHY, C.1998. *Mahilaka, An archaeological investigation of an early town in northwestern Madagascar.* Studies in African Archaeology 15. Uppsala, Sweden.

[9] CHITTICK (1974) avance que l'occupation de la ville de Kilwa, sur la côte Est de l'Afrique est antérieure à 1200 AD. Ce fut une ville marchande très prospère vers la moitié du XIIIe siècle, Archéologie de la côte orientale de l'Afrique, Taloha, n°2, p.23.

Appendix II: Chlorite Schist Report - Christoph Nitsche

Note: Original text formatted to fit thesis guidelines.

Report on five Chlorite Schist Sherds from Kingany, NW Madagascar: Petrograph and Provenance Implications

Christoph Nitsche, University of Fribourg

June 10, 2020

Introduction

Five thin sections of suspected chlorite schist fragments from Kingany, located west of the Bay of Boeny in Northwestern Madagascar, were petrographically examined for this report. Chlorite schist vessel, mostly in the form of lathe-turned tripods, are common finds in Medieval assemblages in Northern Madagascar and have been distributed as far as Kilwa and Manda (Chittick, 1984, 1974). Most known chlorite schist quarries are situated in the vicinities of Vohémar (e.g. Gaudebout and Vernier (1941); Verin (1975); Serneels et al. (2019)), where the geological units of the crystalline basement containing chlorite schist start only a couple of kilometres inland. This proximity allowed a close relationship between quarries and coastal settlements, up to the point where vessel brutes were transported to the settlements for finishing and the quarry was part of the infrastructure of the village (e.g. in Bobalila, north of Vohémar).

Kingany is different in that it is at least 140 km away from any basement outcrop (Wright et al., 1996) and almost 450 km away from the closest known chlorite schist quarry (Andrianabe, see also Lods (1955)). The nearest outcrop of the specific geological unit that hosts all chlorite schist quarries, namely the Manambato Suite (Thomas et al., 2009), is 375 km away (see Fig. 3). Petrographic analysis is a useful tool to determine if the chlorite schist artefacts from Kingany were imported from the North, or originate from a yet unknown chlorite schist source closer to the site.

Method and Terminology

Figure 1: Left: Example of idiomorphic olivine in basalt. **Middle:** Pseudomorph after olivine surrounded by opaque cloud in a Malagasy quarry sample. **Right:** The same pseudomorph under crossed polarisers. Talc is blue, chlorite is grey and amphibole is orange.

Hoesbachites are defined by the mineral assemblage amphibole-talc-chlorite and are believed to be metasomatic alteration products of ultramafic precursor rocks, meaning magmatic rocks with low Si and elevated Fe and Mg contents that have been altered by hot fluids during the final amalgamation of Gondwana some 500 Ma ago (e.g. Jöns et al. (2009)). During this collision, the modern-day eastern coast of Madagascar was buried around 30 km deep in the collisional mountain chain and experienced almost 1000◦C close to Cap Est (Jöns et al., 2006). Peak conditions of this metamorphic overprint are gradually declining towards the NW tip of the island, following fault structures with a WNW-ESE trend (Thomas et al., 2009)). This change in metamorphic conditions created a gradient, which is recorded also in textural details of the rocks used by the Rasikajy. All samples contain replacement structures called pseudomorphs, where the original form of the magmatic mineral olivine is preserved. Olivine is no longer present in these rocks due to the hydrothermal alteration and was replaced by the new assemblage of amphibole-talc-chlorite (see Fig. 1).

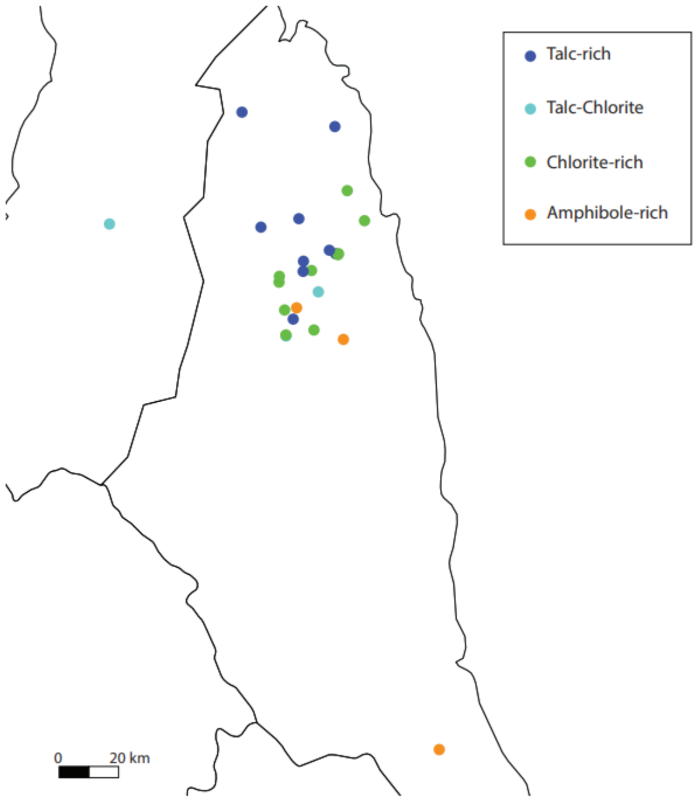

Figure 2: All quarries visited in this study coloured by petrographic types based on replacement structure mineralogy.

The concentration of these minerals is dependant on the metamorphic conditions during their formation: at high temperatures, amphibole is the dominant replacement phase, intermediate temperatures favour chlorite, and talc will be dominant at the lowest conditions. If we plot the pseudomorph mineralogy of all quarries (Fig. 2), it becomes evident that the dominant replacement phase changes from amphibole (high temperatures) in the southeast of the study area, to talc in the northwest. This is in accordance with the described metamorphic temperature gradient for Northern Madagascar and allows to at least assign a region of provenance if the respective quarry cannot be identified.

Petrographic Description

Table 1: Summary of mineral assemblages. Maximum grain size in mm.

Sample	**Amphibole**		**Chlorite**		**Talc**		**Opaque**		**Remarks**
	Vol.%	Max. Size	Vol.%	Max. Size	Vol.%	Max. Size	Vol.%	Max. Size	
PP12	30	3	30	0.75	**40**	1.5	$\leq$5	0.35	Anthophyllite?
PP17	**40**	7	35	0.74	20	1	5	0.9	Primary Hornblende
TU2-2	**60**	3.5	23	2	10	1.5	7	0.4	Large Amphibole
TU2-3	10	1	20?	1	**55**	5	10	0.5	5% Calcite
TU2-4	20	4	30	2	**45**	1.5	5	0.25	Fine grained

PP12

PP12 has a chaotic texture with very few opaque minerals. Talc is the most abundant phase. It occurs both as independent tabular patches in the matrix and intercalated with amphibole, where it is fibrous and follows the crystallographic sense of the latter. Amphibole, appearing to be replaced by talc, is highly poikilitic (rich in inclusions). It is colourless with a very faint pleochroism (change of colour) to pale green. Remaining amphibole patches contain very fine grained opaque (black, non-translucid) mineral clouds up to 0.3 mm in size. Extinction is early around these inclusions and the initial texture of the protolith (rock before metamorphism) is preserved (see Fig. 7). A second generation of amphibole is represented as two colourless prismatic grains without inclusions, that are idiomorphic (proper crystallographic form) and cross pre-existing structures. Judging from the low birefringence, oblique extinction and optically negative character, this could be anthophyllite (Fig. 5).

Chlorite forms large mm-scale patches as well as small intercalations with talc and amphibole. Its interference colour is grey with a faint brownish taint and the sign of elongation is negative, both pointing towards a Mg-rich composition (Tröger et al., 1982, p. 116).

The opaque phases occur as isolated grains evenly distributed in the matrix. Some have idiomorphic trapezoidal shapes implicating magnetite. In opposition to most chlorite schists, there are no opaque accumulations containing pseudomorphic structures in this sample.

Characteristic Features: Idiomorphic anthophyllite; lack of opaque accumulations; pseudomorphs are only recorded in amphibole.

PP17

The texture of PP17 is chaotic and marked by large poikiloblasts of amphibole containing fine grained talc and chlorite. Although being largely replaced, amphibole remains the most prominent phase and is colourless with a very faint pleochroism to pale green. Three examples of dense accumulations of opaques within colourless amphibole are relics of primary hornblende, a brown amphibole which is only preserved in the center of these structures and difficult to identify due to alteration (Fig. 10).

Talc occurs mostly as patchy aggregates, both in the matrix and within amphibole. Chlorite is generally fine-grained and mostly occurs as intercalated patches. It is Mg-rich with a pale grey normal interference colour, negative sign of elongation and positive optical character. Opaques are more pronounced in this rock and occur in three variations: (1) isolated, xenomorphic grains in the matrix; (2) intercalated with talc in round replacement structures (symplectites) (Fig. 12); (3) as dense clouds within amphibole as a relic of hornblende.

Pseudomorph structures are present, even though their form is not always definitive for olivine replacement. Where they occur, they are the already mentioned symplectites where talc is the dominant phase and the opaques are within the structure.

Characteristic Features: Existence of dense opaque accumulations after hornblende; faint, talc-rich olivine pseudomorphs containing opaques.

TU2-2

TU2-2 is well preserved. Its texture is dominated by equigranular amphibole surrounded by patchy chlorite. Amphiboles are generally colourless, but often contain cores with distinct green to pale green pleochroism and parallel opaque exsolution needles (Fig. 17). The large, colourless amphiboles also contain well defined pseudomorphs rich in chlorite and talc (Fig. 19). Their round, sometimes octahedral form clearly defines them as replacements of olivine. Chlorite occurs both as patchy aggregates in replacements and large platy crystals surrounding amphibole. All chlorite in this sample is again Mg-rich.

Talc is rare in this sample, but can form large prismatic crystals in the matrix. The majority of talc is present in pseudomorphs, where it is fine-grained but can be distinguished from amphibole by its birds-eye extinction. Opaque phases are rare in the matrix and are mostly concentrated in the center of amphiboles and in pseudomorphs, respectively. Due to the lack of idiomorphic grains, no further identification of the opaques are possible.

Characteristic Features: Large, equigranular amphiboles; chlorite-rich pseudomorphs.

TU2-3

TU2-3 is heavily altered to a point where both amphibole and chlorite are almost completely degraded to a brownish-yellow colour and do not show optical properties, with only isolated grains allowing their identification. However, this rock has a very unique texture formed by groups of large talc needles dispersed through the rock. These needles are mostly grouped and occur both as parallel features as well as chaotic nests (see Fig. 22).

Where it is unaltered, amphibole can be identified by its cleavage angle. It is colourless and a lot less abundant than usual. Chlorite is equally altered, but some large grains preserved their optical properties in their center. Chlorite in this sample has an abnormal blue interference colour, implicating a Fe-rich composition. Opaque phases are xenomorphic but abundant, and pseudomorph structures that they surround. Even though most of these pseudomorphs are disguised by alteration, it is evident that talc is the major replacement phase. Calcite is an accessory phase and forms groups of small crystals. It is easily identified by its ultra-high birefringence.

Characteristic Features: Distinct talc needles; very talc-rich pseudomorphs; low amphibole abundance; contains calcite.

TU2-4

TU2-3 is also profoundly altered, but all constituents can still be distinguished. It has a homogeneous texture lacking large crystals due to the very advanced replacement of amphibole by talc and chlorite. The remaining amphibole occurs mainly as isolated, colourless grains of ≤1mm. The former existence of larger amphibole (max. 4 mm) is still attested by simultaneous extinction of groups of these grains, showing that they originate from the same crystal.

Talc is again the most abundant phase. It is mainly intercalated in the fine-grained matrix, but larger grains are present. Chlorite is heavily altered, but grain cores show normal grey interference and Mg-rich charatceristics. The opaque phase is homogeneously dispersed within the matrix, but some accumulations exist in grains of low birefringence amphibole. The opaques also accumulate around pseudomorph structures, some of which are after olivine. These pseudomorphs are very rich in talc (Fig. 25).

Characteristic Features: Low amphibole abundance; talc-rich pseudomorphs.

Provenance

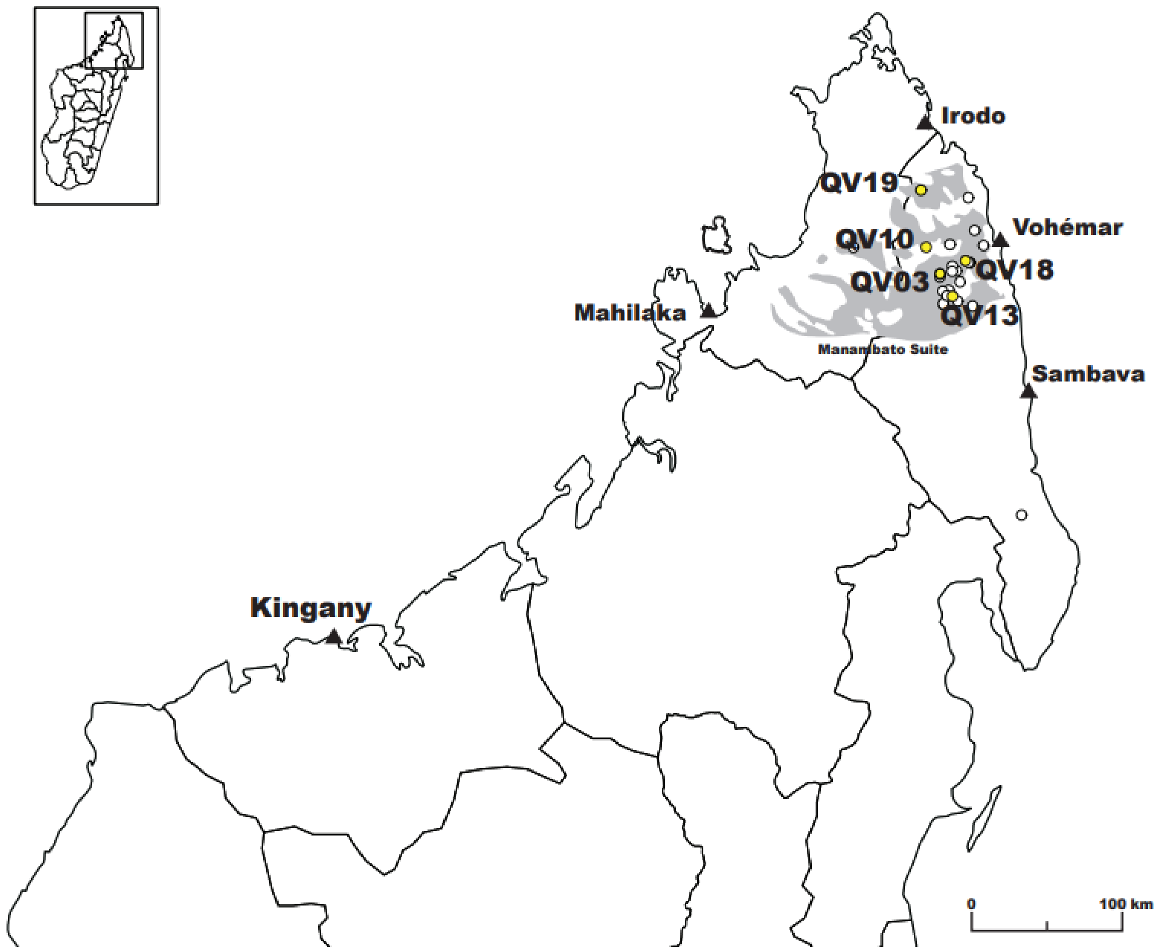

Figure 3: Possible sources for the Kingany samples (Yellow dots).

The presence of the mineral assemblage amphibole-talc-chlorite in all five samples marks these rocks as Hoesbachites, the petrographic term for chlorite schist in Madagascar. Except for an isolated quarry in Egypt's Eastern Desert (Gebel Rod el-Baram, Harrell (2013)), this rock type is not known to have been used for vessel production outside of Madagascar and **it is very unlikely that these objects were imported from overseas.**

Due to the small thin section size, proper tracing to single quarry sources is even more difficult. There are, however, strong implications for some of the samples (photographic evidence and documentation is provided in the appendix.) **PP12** shares its characteristic features with the quarry site of **Andrafialava (QV13)**, a small site south of the Rangovato massif, around 10 km southeast of Milanoa. Our Andrafialava sample also contains anthophyllite, does not have opaque accumulations and faint pseudomorphs are preserved in amphibole only (see appendix). The major difference is the abundance of anthophyllite, which is significantly higher in the quarry sample. It has to be noted that mineral abundances can change significantly on outcrop scale. Andrafialava is in a zone where we only discovered one actual extraction site, but much debris and brutes were dispersed along the way to the site. It is highly probable that other extractions exist, and that one of them could be the source for PP12. Anthophyllite is absent in our other samples and it is known to have a very narrow stability band (Greenwood, 1963), which makes its provenance close to the Andrafialava quarry reasonable.

Being the smallest sample, the origin of **PP17** is less conclusive. The closest resemblance is to the lithology of the quarry of **Tsarahiaka (QV03)**, a large site in the valley of the upper Antsampanela, some 40 km west of Vohémar. The grain size spectrum is homogeneous and dense opaque clouds with relics of primary hornblende are present. Talc is the dominant replacement phase in some pseudomorphs, while others contain more chlorite. In this case, the petrographic evidence is not definitive for a single quarry. Its mineralogy rich in amphibole but with rising amounts of talc and chlorite, certainly places it along the longitude of Vohémar, where the quarries consist of rocks with the same mineralogical proportions.

TU2-2 has a very distinct texture rich in equigranular amphibole containing opaques in their centre. This texture is equally present in the quarry of **Andilamena (QV18)**, one of four sites currently known in the Analafiana Forest located 20 km west of Voh´emar. The Analafiana Forest has already been recognised as an important extraction zone by the early authors and we are finding new sites every time we go back there. The Andilamena quarry is a large extraction on a plain between the two Analafiana massifs, where the digging left a remarkable hill in the landscape (more details in our attached field report). The multiple thin sections we have from this quarry all show euqigranular amphibole, very similar opaque patterns and chlorite-rich pseudomorphs. The origin of TU2-2 from this quarry is likely.

TU2-3 has a very unique texture with large talc needles that is not repeated in any of our samples. Its very low amphibole concentration makes it improbable that it comes from one of the sites on the east coast. The fact that amphibole is nonetheless present marks it as a Malagasy sample, but the reference quarry is still unknown. Based on the high talc content, two possible sources should be mentioned: According to the geological map, there are large chlorite schist lenses in the upper valley of the northern Mahavavy, close to the village of Ambohipato. No one has ever studied these outcrops and the existence of quarries there remains hypothetical. For all other lenses marked on the geological maps however, quarries were always present. The position of this zone in its respective geological unit suggests that these rocks would be rich in talc with only minor amphibole. We will study this zone later this year and see if we find anything. The second possible source is from ultramafic units surrounding Toamasina. There are reports on chlorite schist vessel findings there (pers. comm. Chantal Radimilahy), but no quarry is known. Talc-rich rocks are present in the area (e.g. Grieco et al. (2012)), and the existence of medieval quarries is not unlikely.

TU2-4 is also undoubtedly from Northeastern Madagascar. The most resemblance is to the quarry of **Ambohimirahavavy (QV19)**, a large surficial quarry just off the RN5 highway, 5 km east of Maromakotra. It is the northernmost site known so far. The lithology there has a similar talc-chlorite to amphibole ratio and talc-rich pseudomorphs are almost identical. A second possible source is the quarry of **Toamasina (QV10)**, which sits on the same latitude but is located 40 km to the north of Ambohimirahavavy. Unfortunately, our only reference sample is disturbed by calcite crystallisation, but the texture, mineralogy and talc pseudomorphs are present as well. Calcite-bearing rocks are frequent in Rasikajy quarries, but they are usually discarded because of their inferior stability and heating capacity. The transition from calciterich to calcite-free rock can occur within centimetres on the same block and is not always visible by the naked eye (see attached 2019 report).

Discussion

While the Malagasy origin of these samples is certain, the detailed provenance is still preliminary. At this point of our study, we still need to improve our microscopic database and create refined reference tables. Microscopic examination is nonetheless a valuable and approachable tool for a first examination and creates the basis for subsequent inclusion of more advanced chemical data. Yet unknown quarries are the highest uncertainty and more samples are needed to refine regional groups.

There is however a high potential for a productive application of this method, especially once it is paired with typological observations of the respective artefacts. We are just starting to understand regional typological styles and the idea of creating a chronology through these styles starts to seem possible. To achieve this, we depend on a continuous collaboration with colleagues working in Madagascar and along the East African coast and are very happy to receive and examine more softstone samples in the future.

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A PP12

Figure 4: Thin section Scan with location of features.

Figure 5: Idiomorphic anthophyllite in PP12.

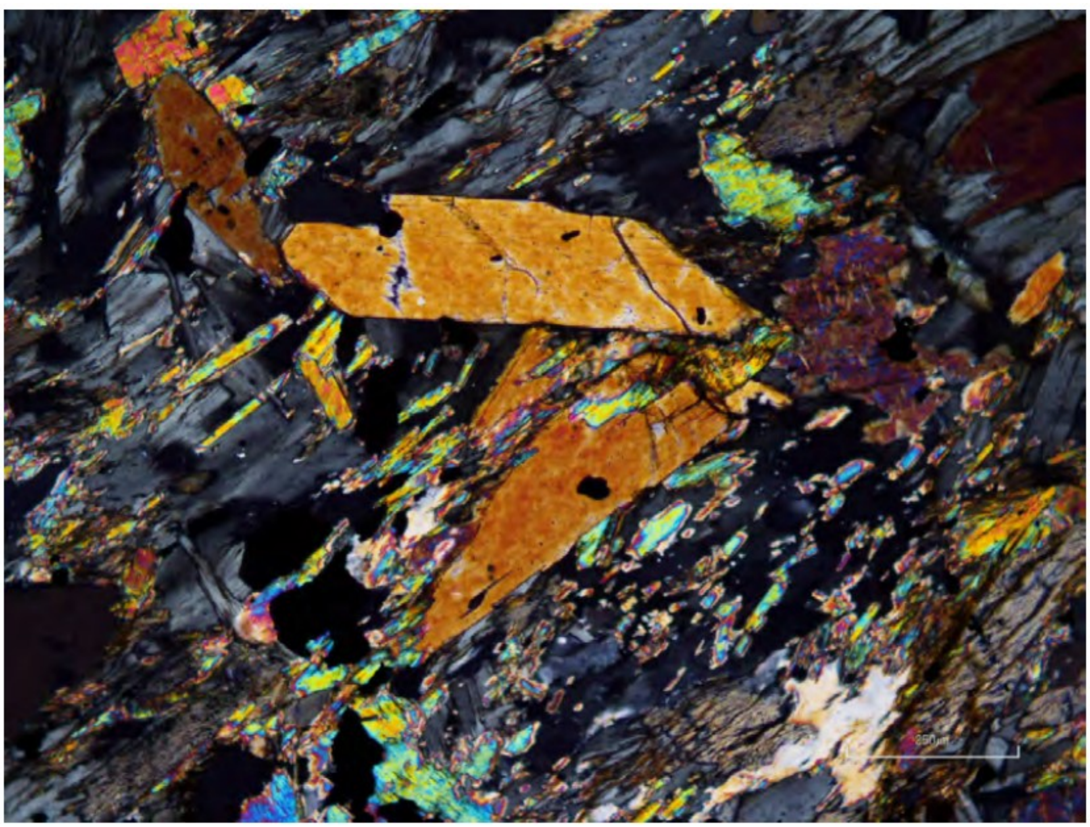


Figure 6: Anthophyllite in QV13.

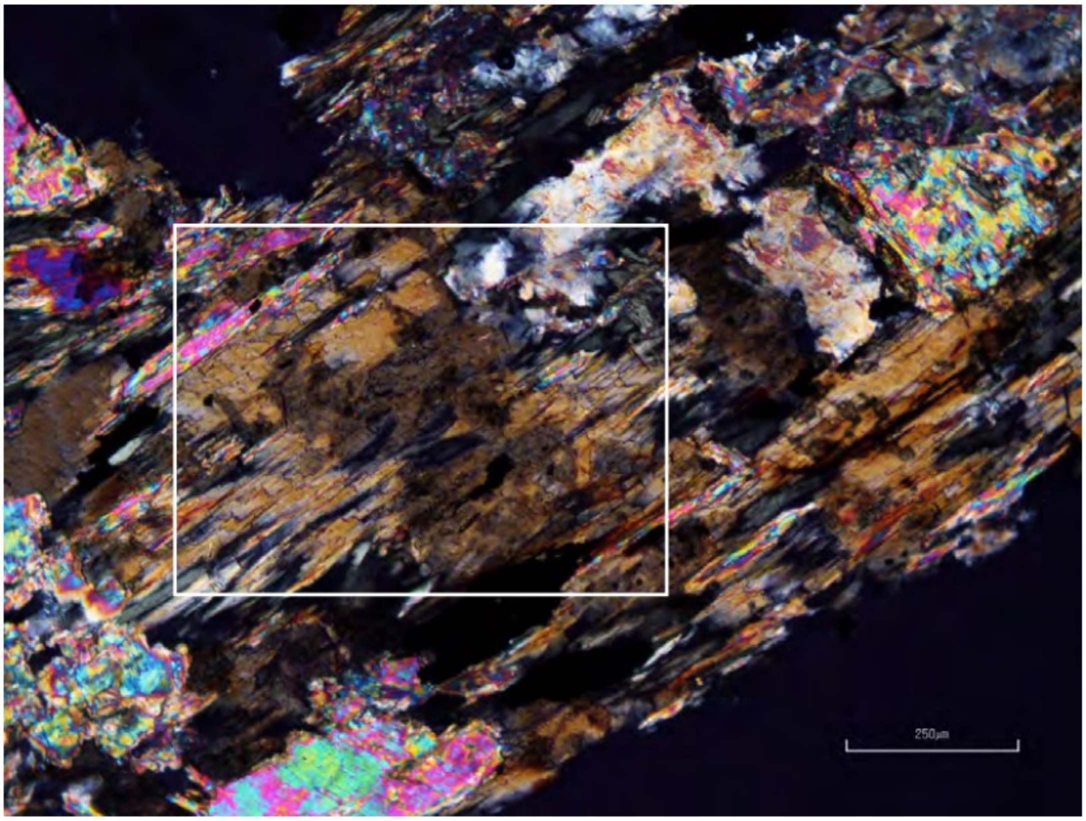


Figure 7: Patchy extinction of amphibole in PP12.

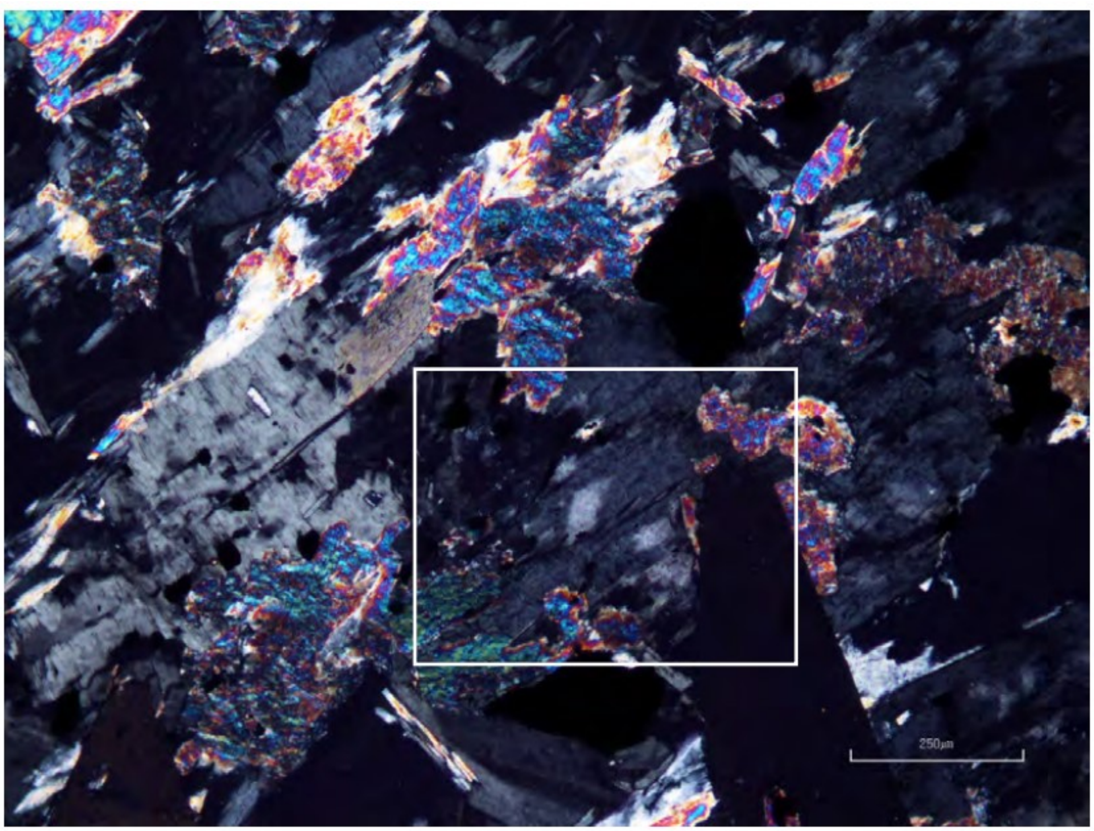


Figure 8: Patchy extinction of amphibole in QV13.

B PP17

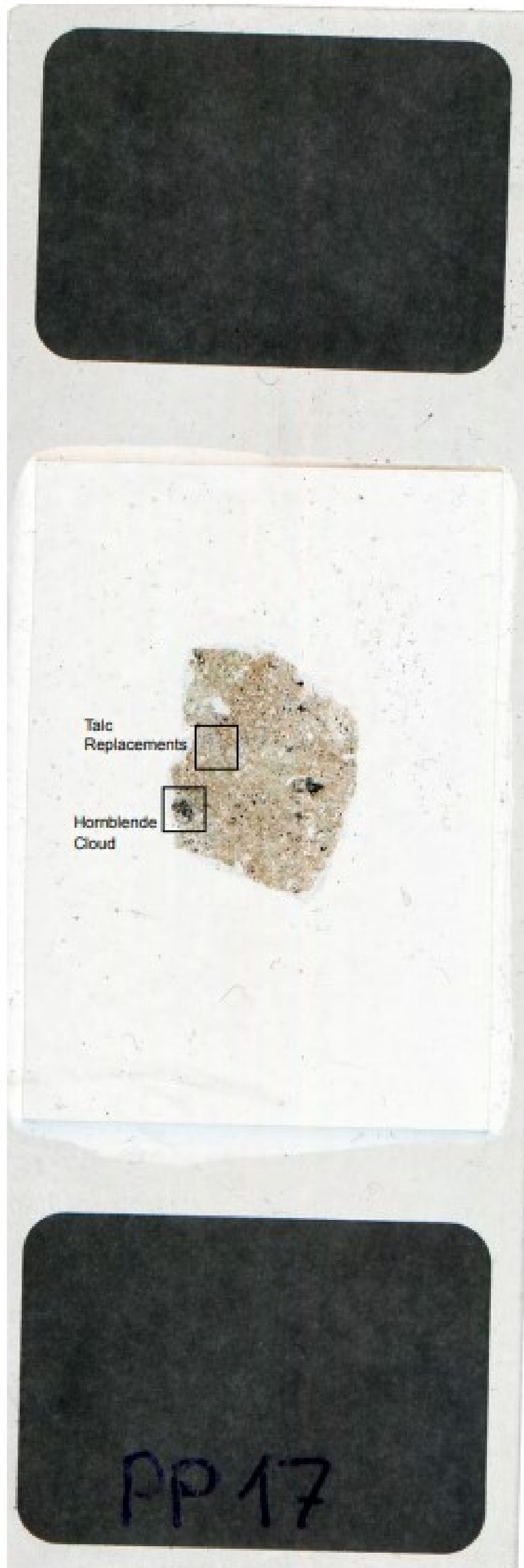


Figure 9: Thin section Scan with location of features.

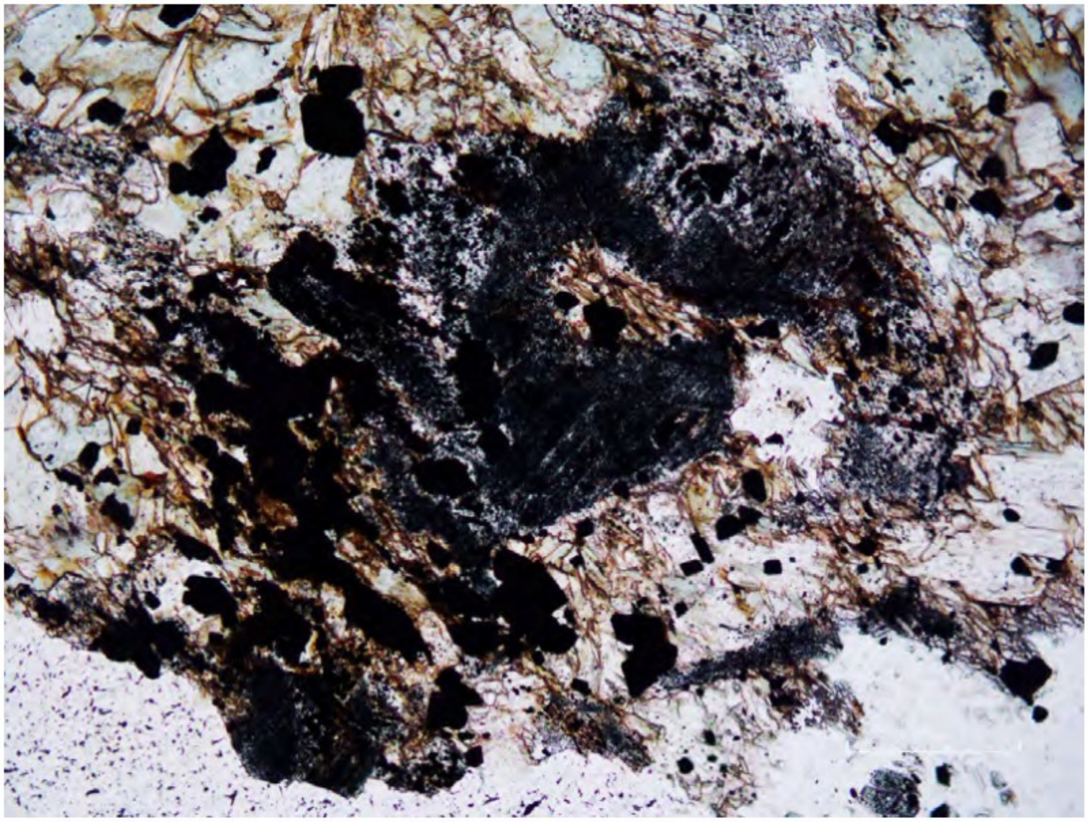


Figure 10: Opaque cloud with hornblende core in PP17.

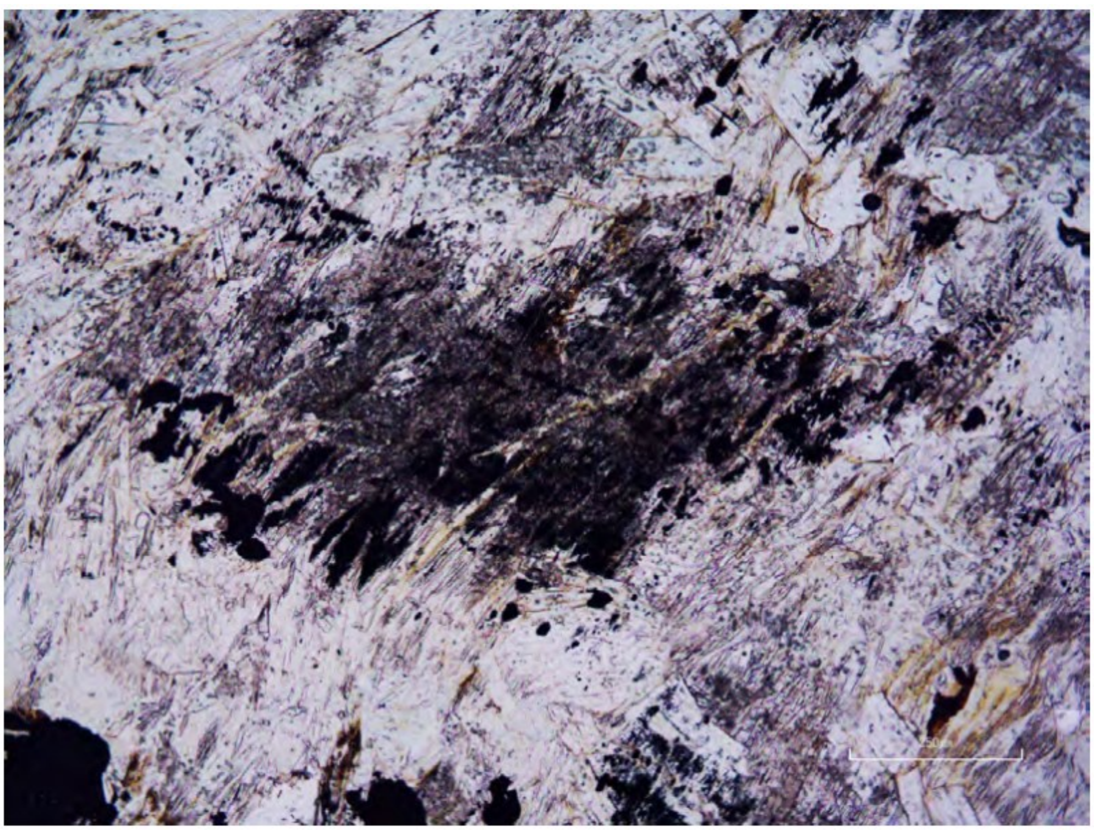


Figure 11: Opaque cloud with hornblende core in QV03.

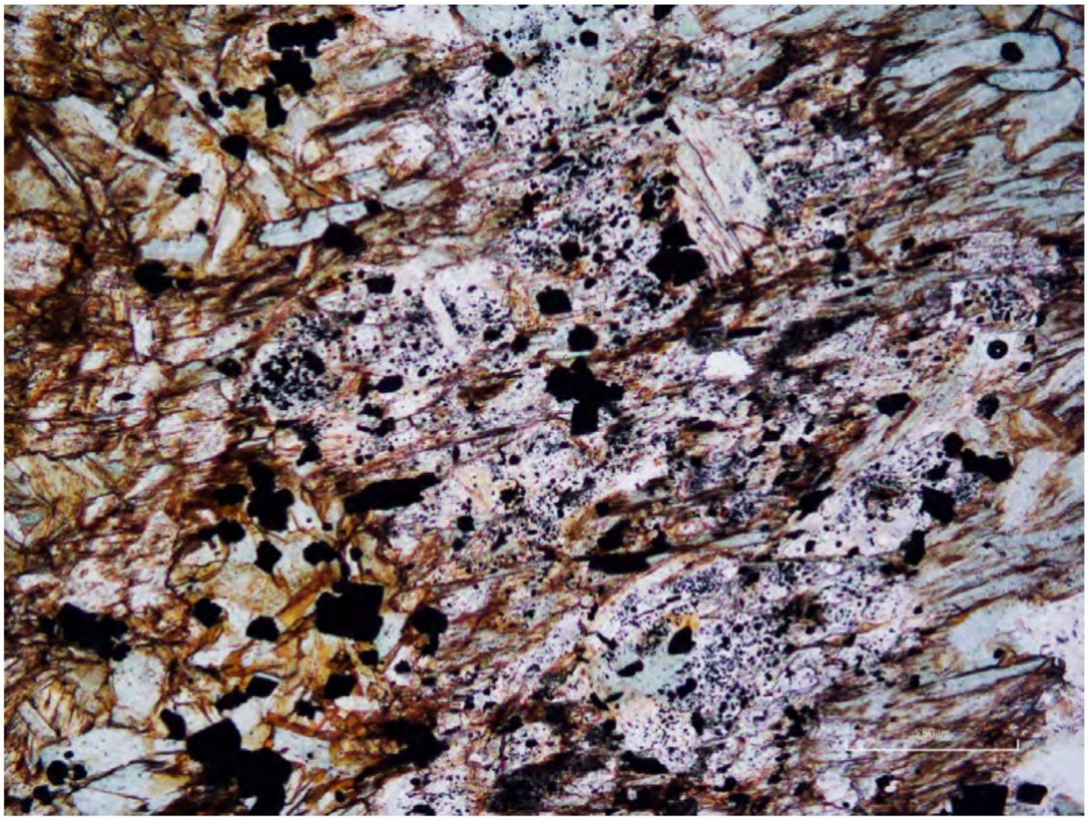


Figure 12: Talc-rich pseudomorphs in PP17 (single polariser).

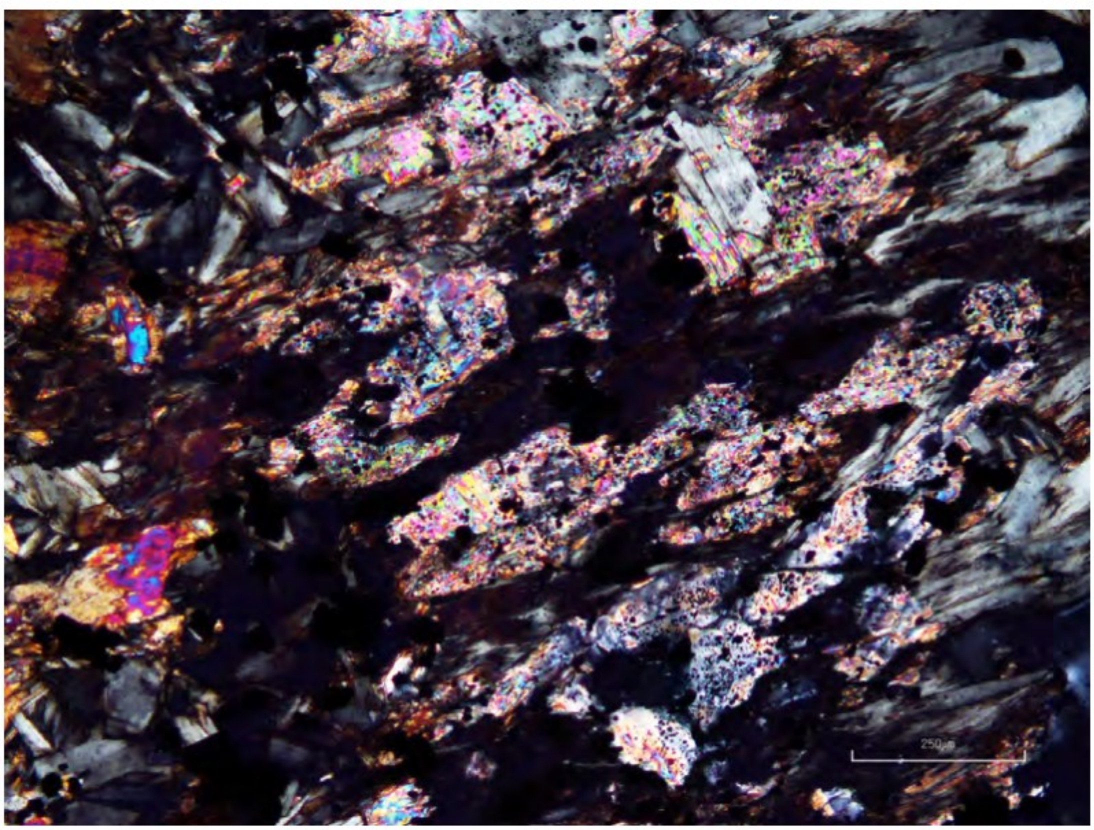


Figure 13: Talc-rich pseudomorphs in PP17 (crossed polarisers).

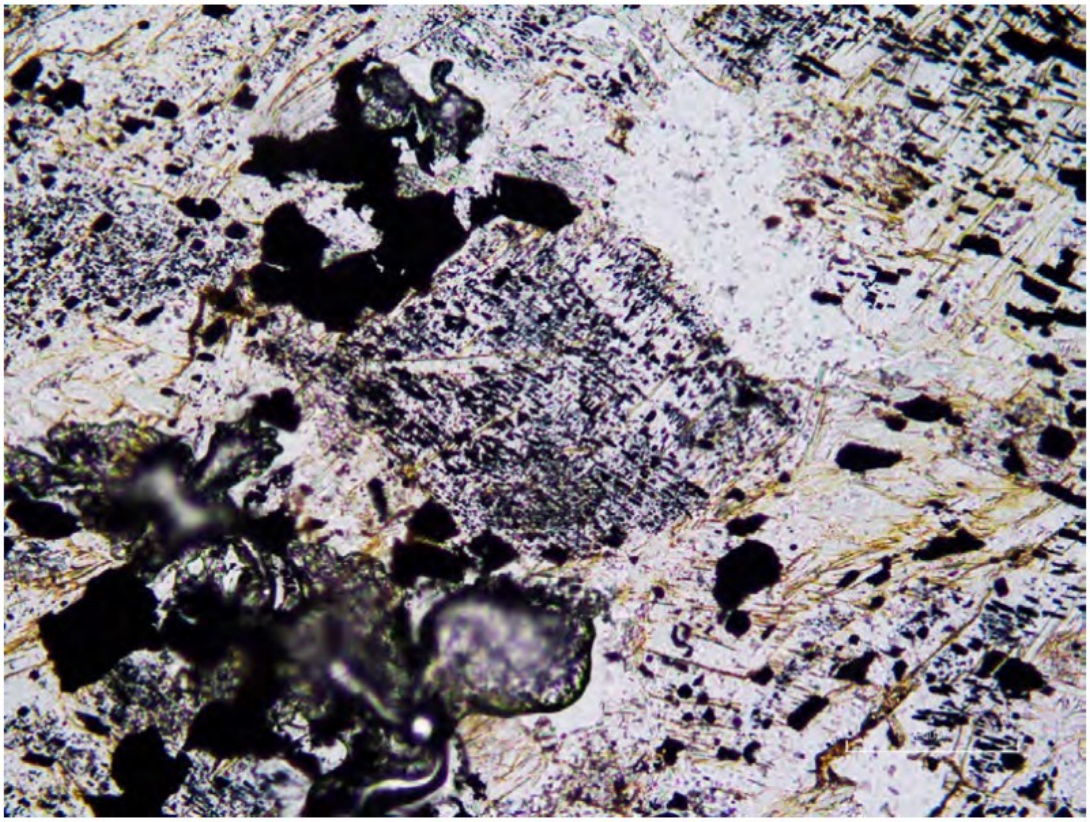


Figure 14: Talc-rich pseudomorphs in QV03 (single polariser).

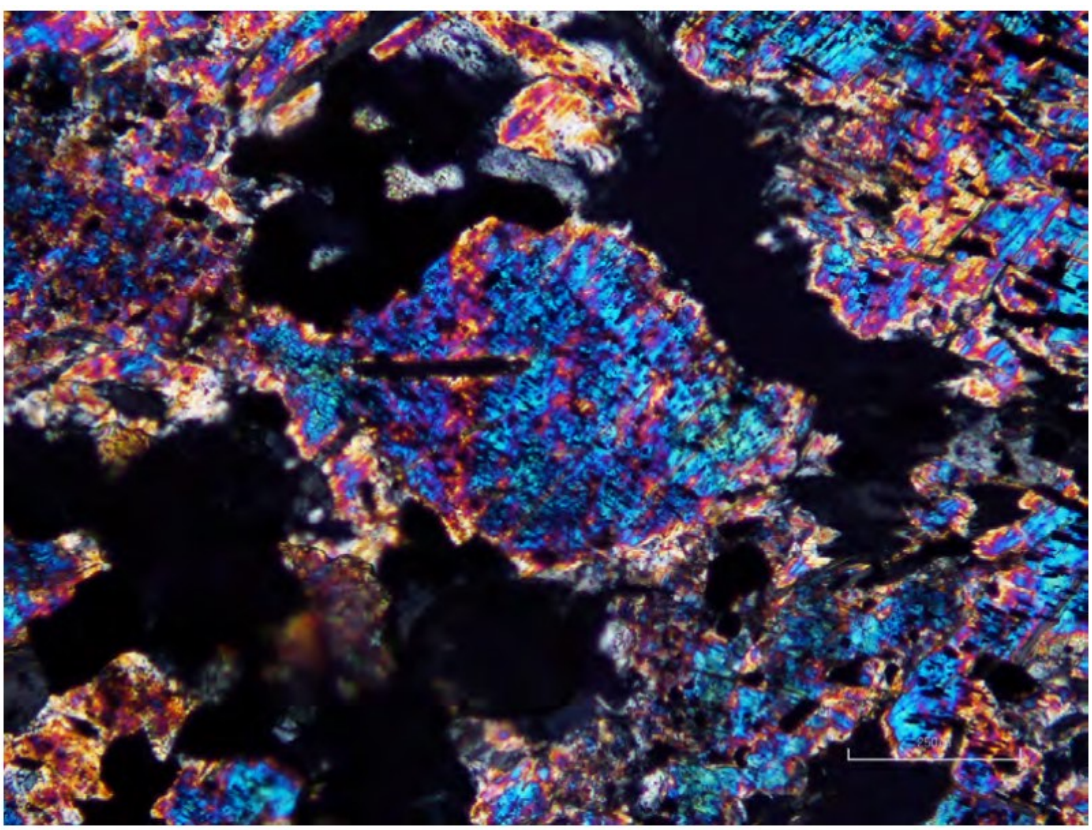


Figure 15: Talc-rich pseudomorphs in QV03 (crossed polarisers).

C TU2-2

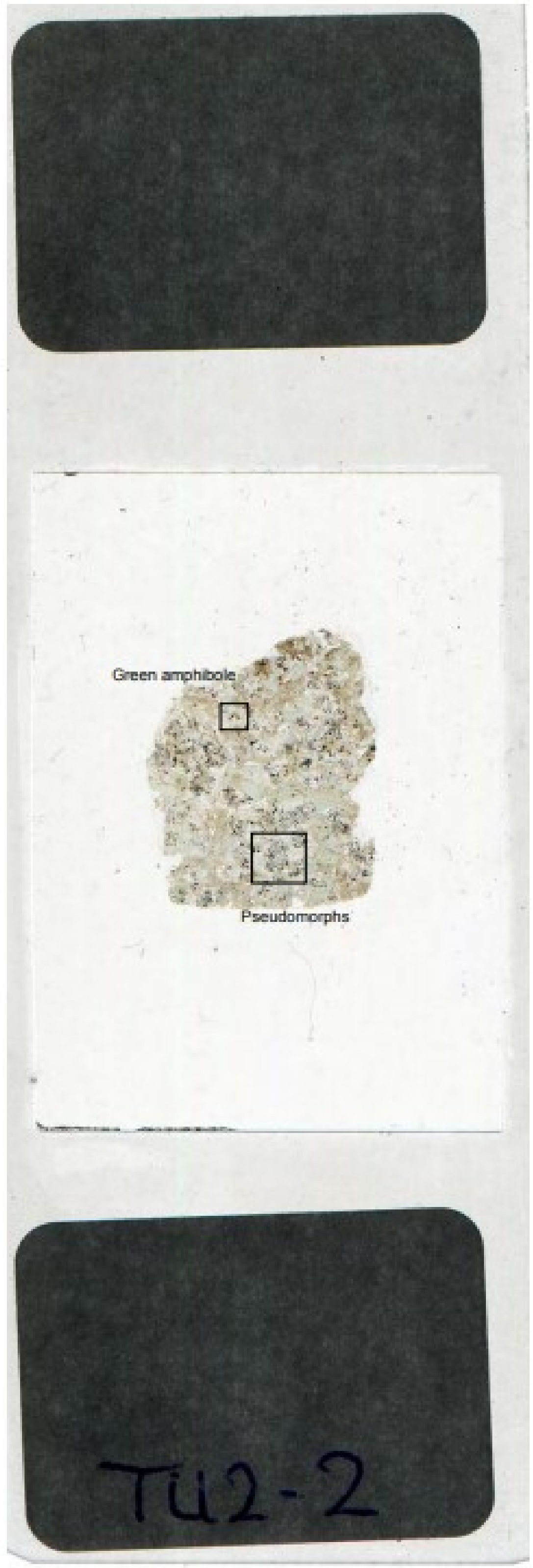


Figure 16: Thin section Scan with location of features.

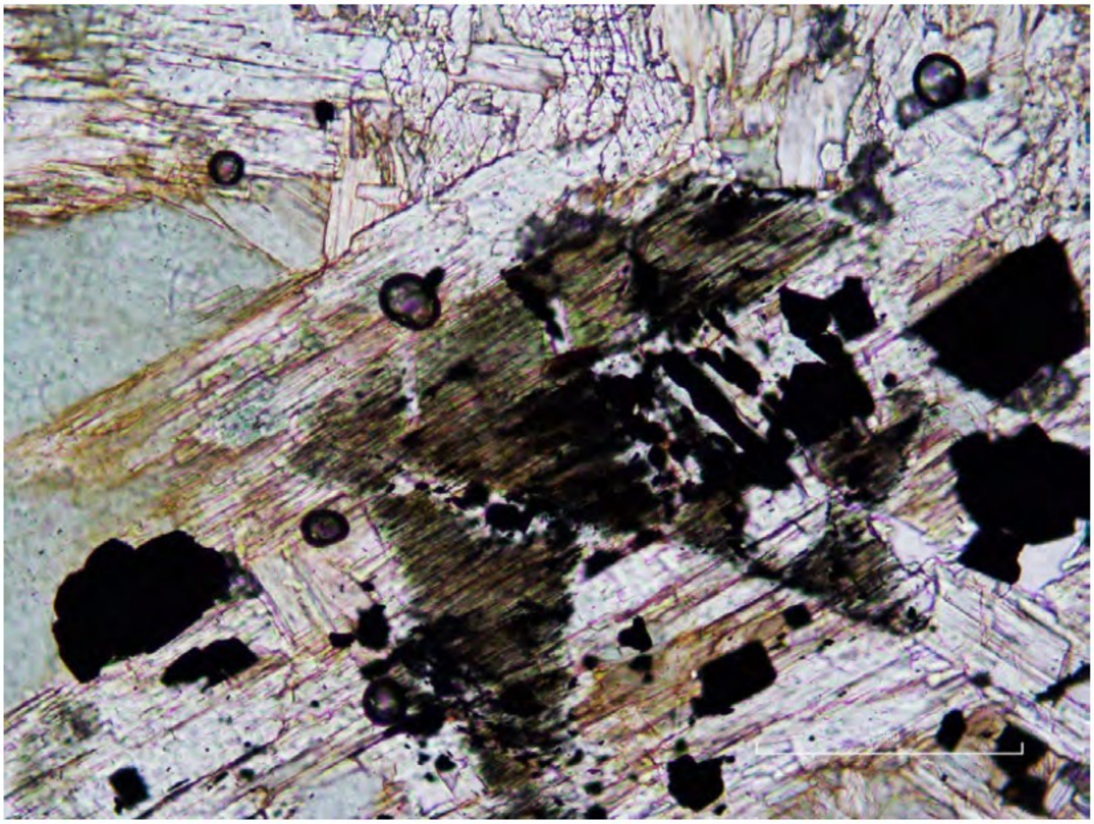


Figure 17: Green amphibole with exsolution in TU2-2.

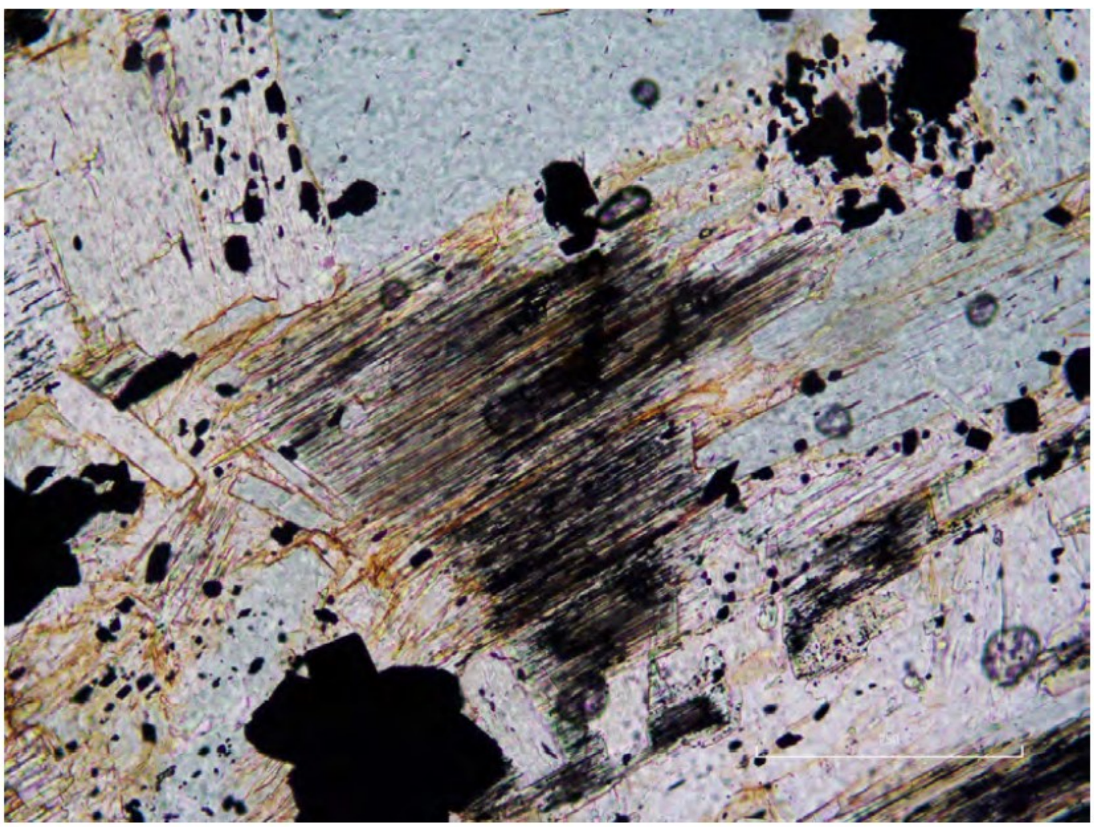


Figure 18: Green amphibole with exsolution in QV18.

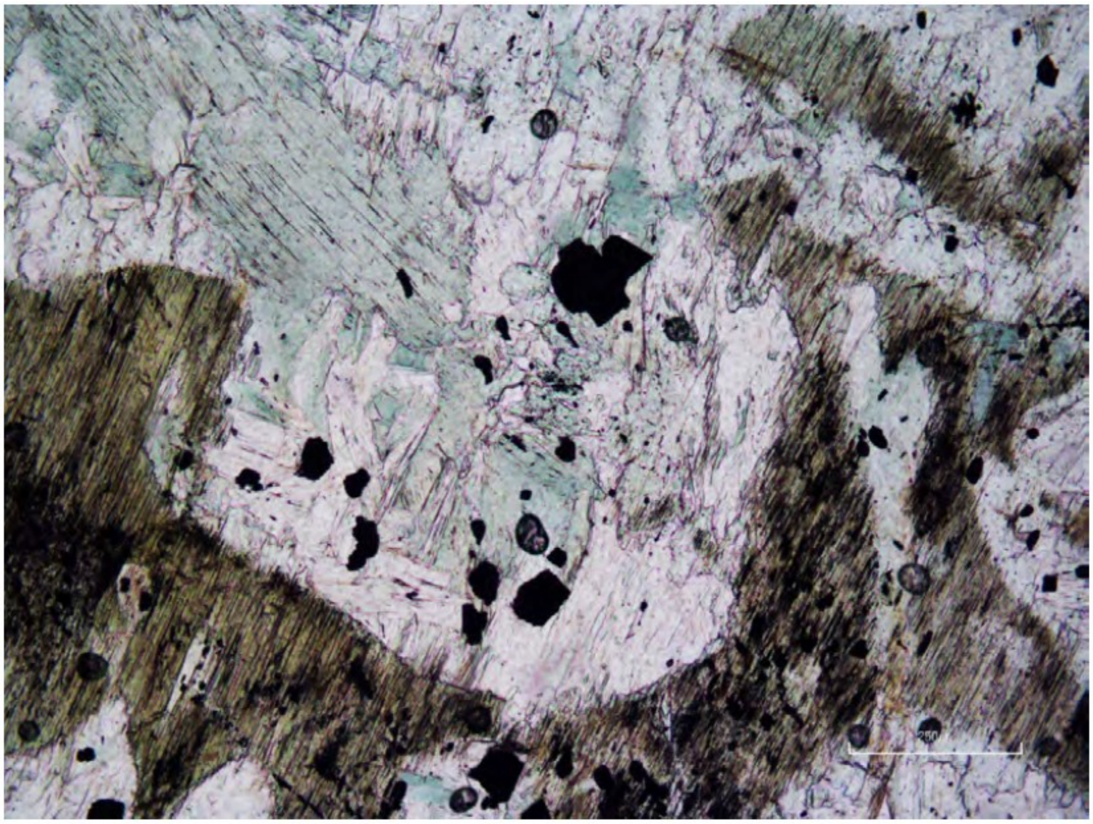


Figure 19: Pseudomorphs after olivine in TU2-2.

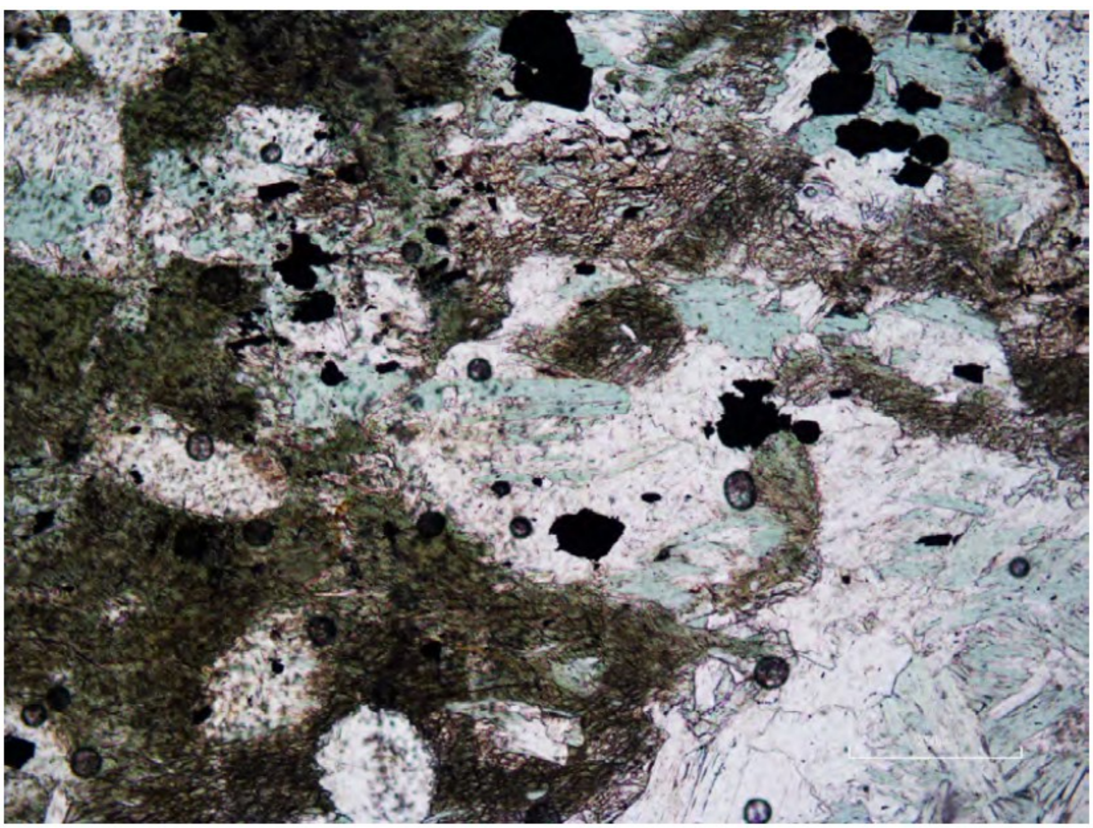


Figure 20: Pseudomorphs after olivine in QV18.

D TU2-3

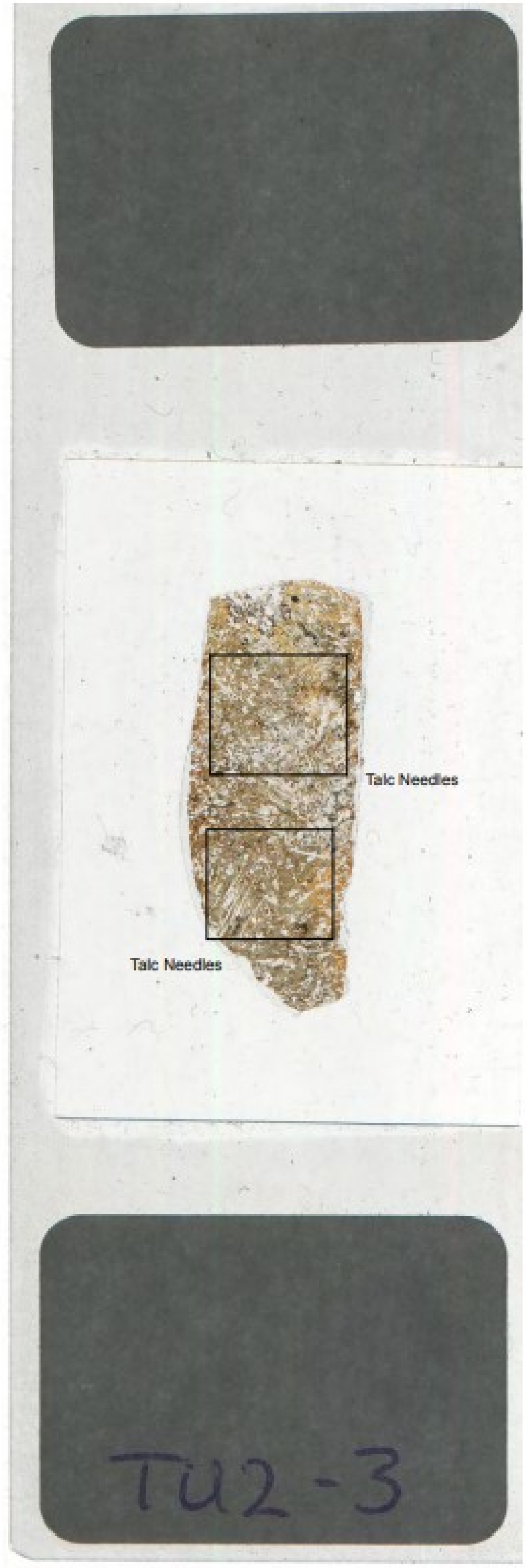


Figure 21: Thin section Scan with location of features.

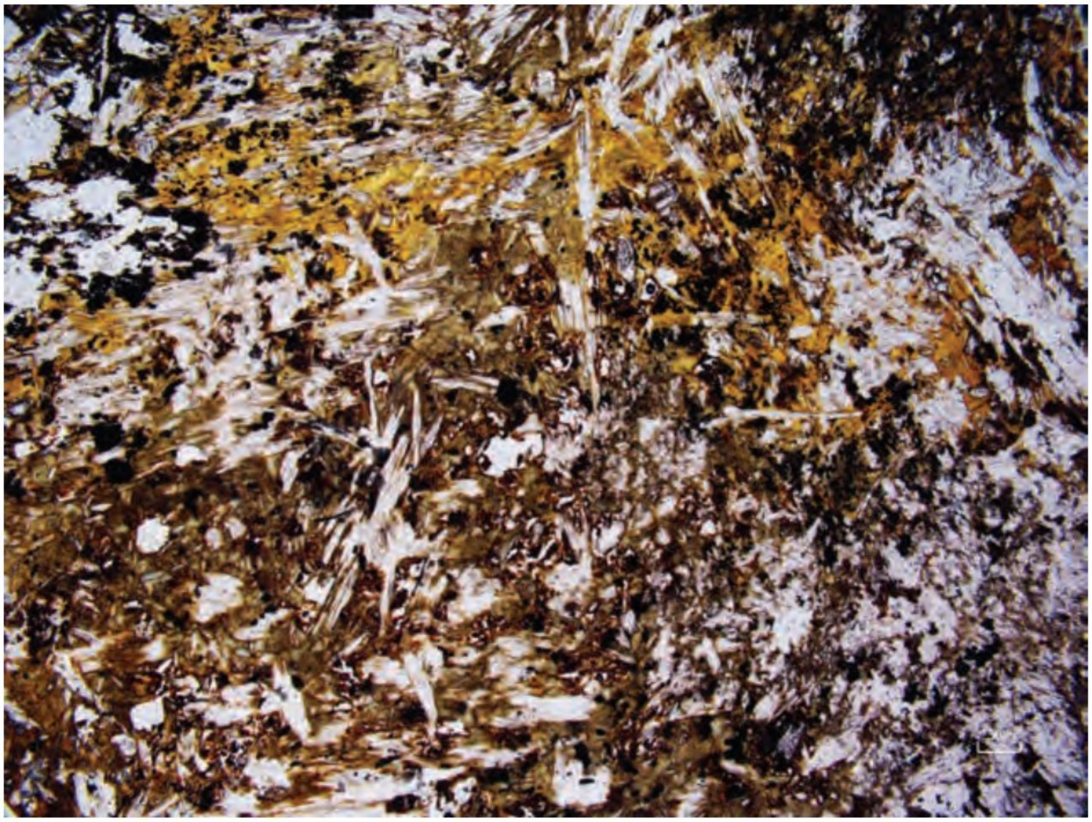


Figure 22: Talc needles in TU2-3.

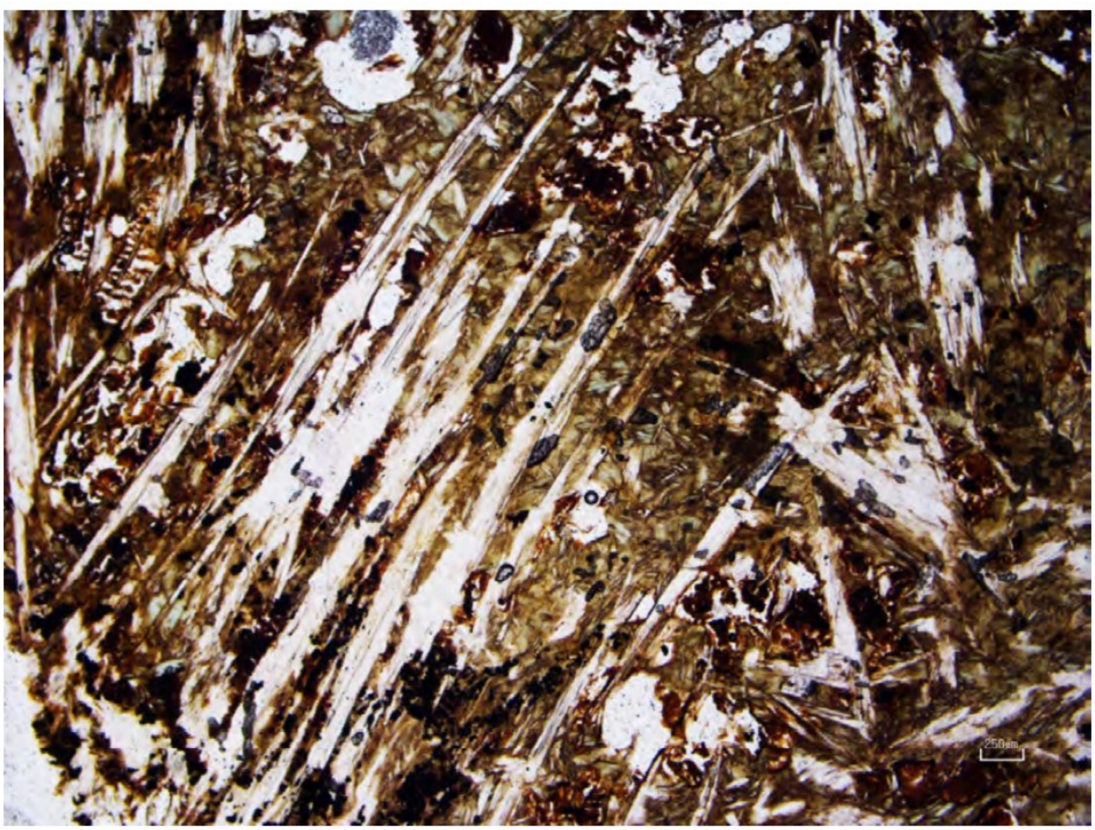


Figure 23: Talc needles in TU2-3.

E TU2-4

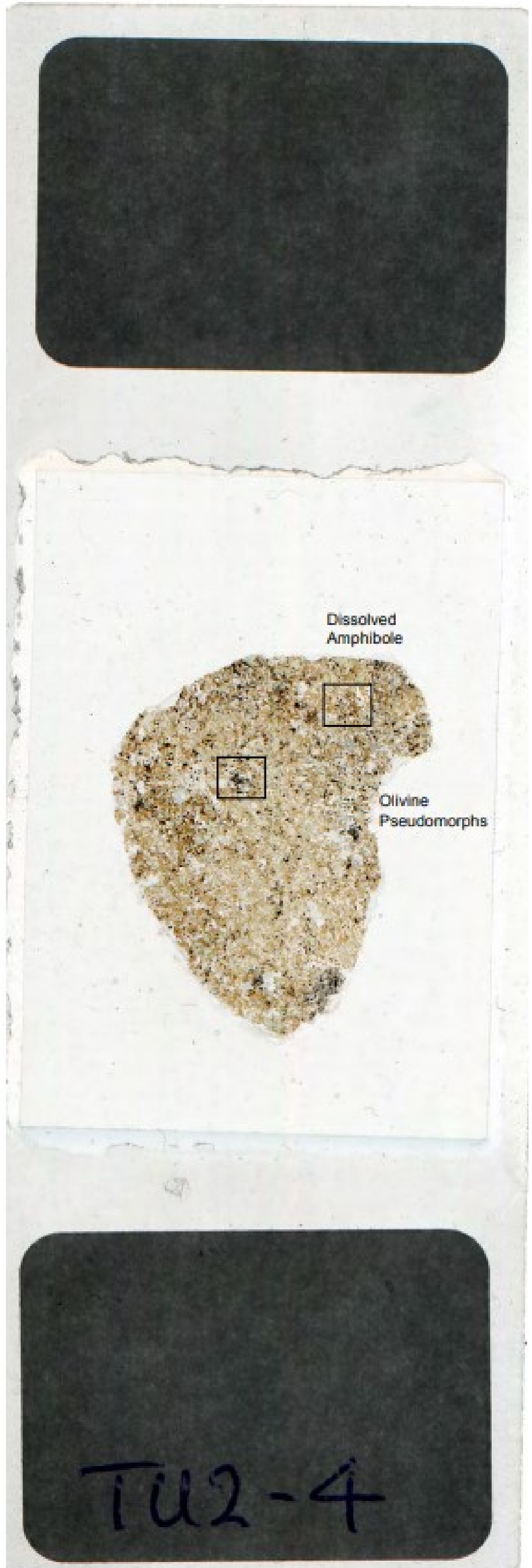


Figure 24: Thin section Scan with location of features.

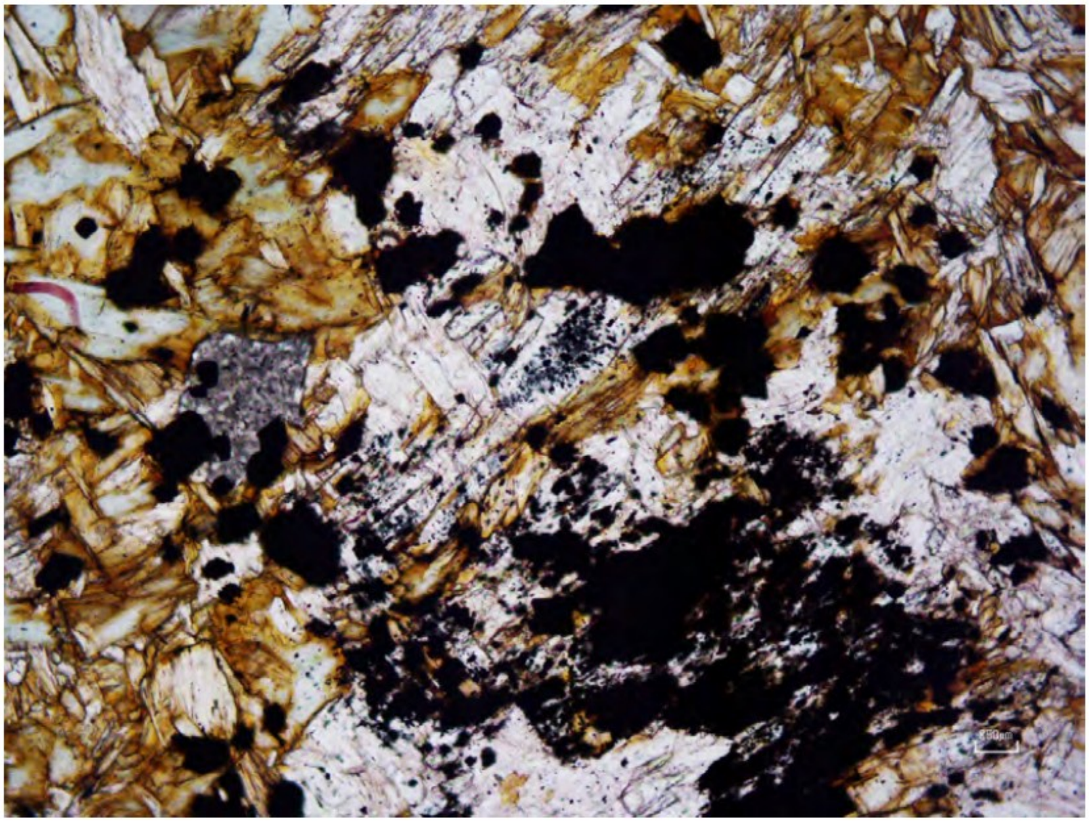


Figure 25: Pseudomorphs after olivine in TU2-4 (single polariser).

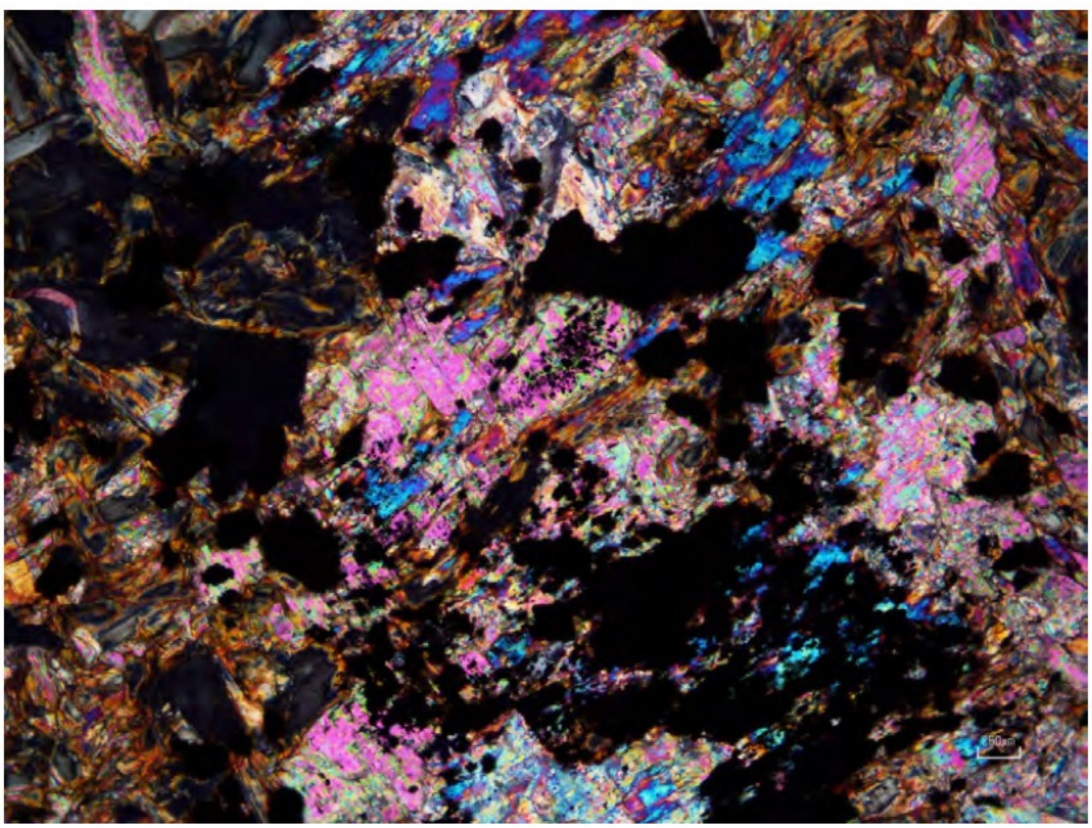


Figure 26: Pseudomorphs after olivine in TU2-4 (crossed polarisers).

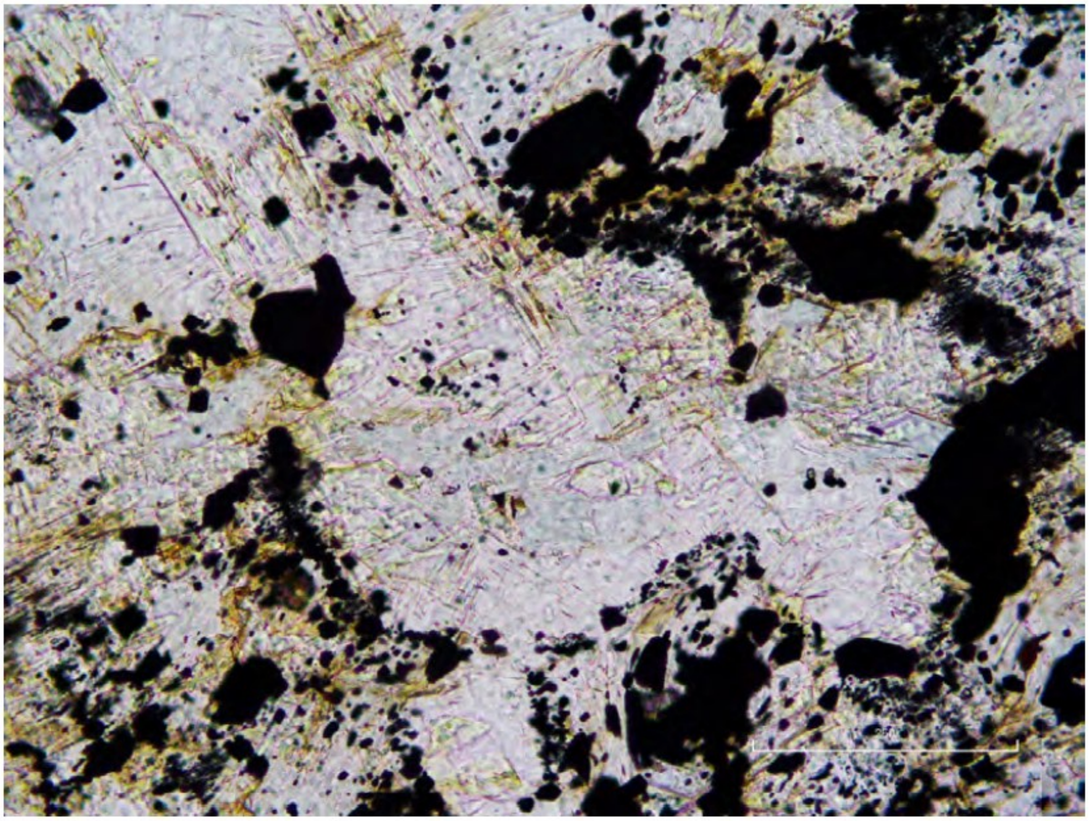


Figure 27: Pseudomorphs after olivine in QV19 (single polariser).

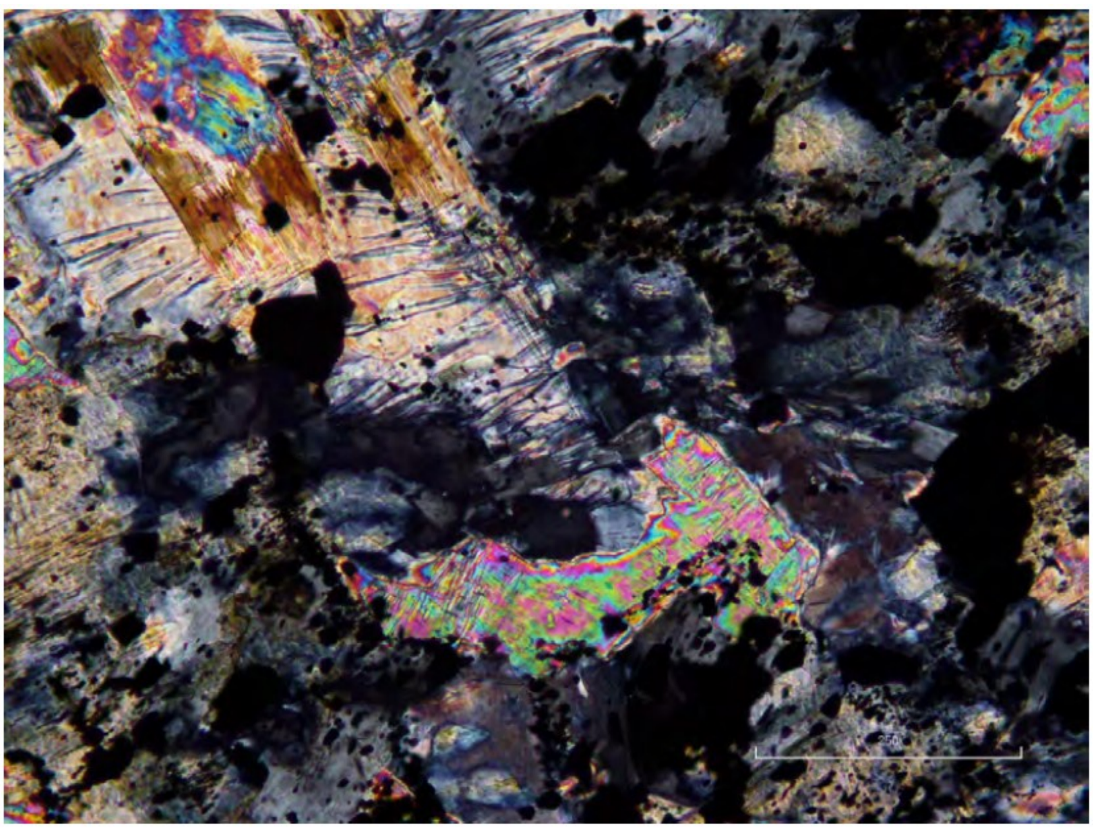


Figure 28: Pseudomorphs after olivine in QV19 (crossed polarisers).

Figure 29: Amphibole in TU2-4 (crossed polarisers).

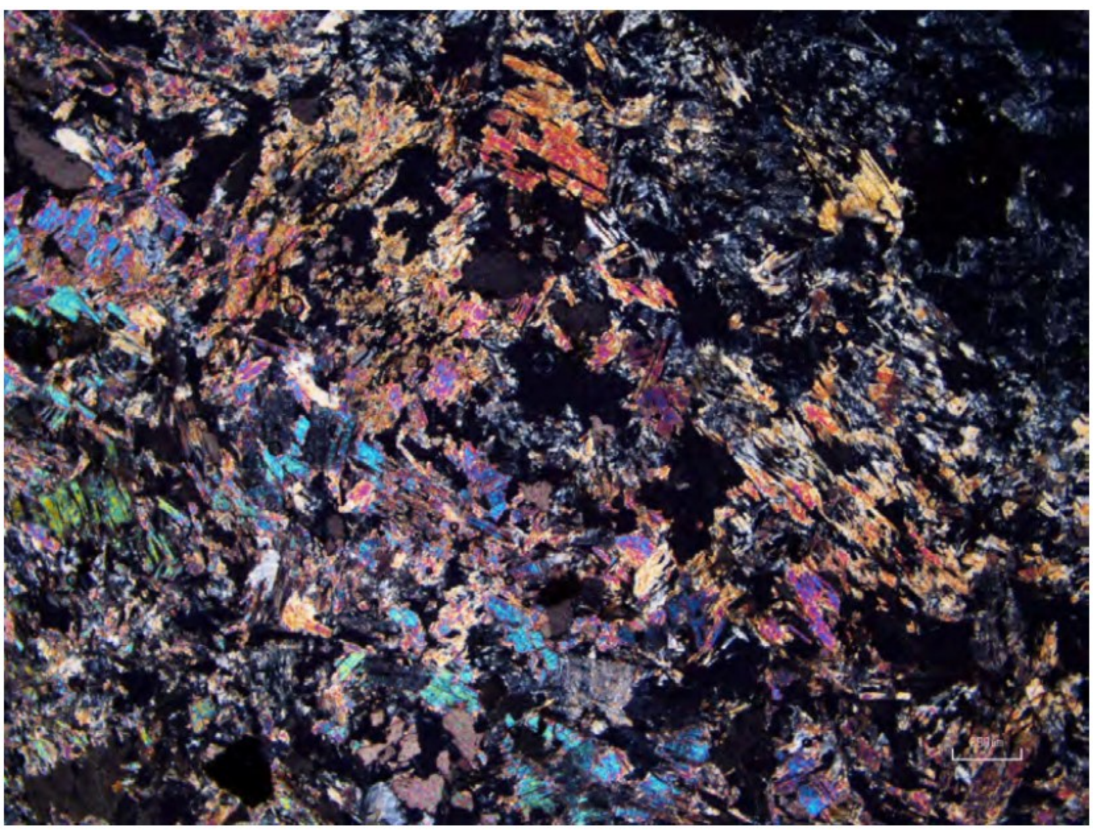


Figure 30: Amphibole in QV10 (crossed polarisers).

Appendix III: Rapport Faunal - Rakotozafy Lucien Marie Aimé & Rakotozafy Luciana Harifitiavana

Note1: Original text formatted to fit thesis guidelines.

Note2: The analysts reversed the unit stratigraphy in their report.

Analyse des restes d'ossement collectés dans le site de KINGANY, KINEXC, Kingany 2

Par: *Rakotozafy Lucien Marie Aimé* avec la collaboration de *Rakotozafy Luciana Harifitiavana*,
Institut de Civilisations-Musée d'Art et d'Archéologie

1. Etude qualitative des ossements collectés.

Les fouilles dans le site de Kingany ont permis de mettre à jour des restes ostéologiques parmi les vestiges archéologiques. Au fait, ces restes sont du type subactuel car ils n'ont subi qu'un début de fossilisation (Rakotozafy 2014[10]) dû à leur récent enfouissement dans du sédiment hôte. Des restes ostéologiques ont été collectés à travers 12 carrés de fouille dont deux sont répartis dans les « Test Unit » (TU1 et TU2) et dix des « Probing Pit » (PP2 à PP25).

[10] **Rakotozafy L.M.A. 2014**. Etude des subfossiles de Vertébrés: changement environnementaux et perspective de conservation de patrimoine. *Bulletin de l'Académie Malgache*, XCIV/1:103-111.

Tableau 1: **Les carrés de fouille source des restes ostéologiques**

Carres de fouille	Date (Année)	Niveau à ossements		Carres de fouille	Date (Année)	Carrés à ossements
TU1						
TU1-1	15 May 2019	0		PP 1	11 May 2019	0
TU1-2	15 May 2019	**x**		PP 2	11 May 2019	**x**
TU1-3 (20-40cm)	15 May 2019	**x**		PP 3	11 May 2019	0
TU1-4	15 May 2019	0		PP 4	11 May 2019	**x**
TU1-5	15 May 2019	0		PP 5 – PP-7		**0**
TU1-6 (48-75cm)	15 May 2019	**x**		PP 8	12 May 2019	**x**
TU1-7	16 May 2019	**x**		PP 9	12 May 2019	0
TU1-8	16 May 2019	**x**		PP10	12 May 2019	**x**
TU2				PP11	12 May 2019	**x**
TU2-1	18 May 2019	**0**		PP 12 – PP 15		**x**
TU2-2	18 May 2019	**x**		PP16	13 May 2019	**x**
TU2-3	19 May 2019	**x**		PP 17 – PP 21		**0**
TU2-4	19 May 2019	**x**		PP22	14 May 2019	**x**
TU2-5	19 May 2019	**x**		PP23	14 May 2019	**x**
TU2-6	19 May 2019	**x**		PP24	14 May 2019	**x**
				PP25	14 May 2019	**x**

x: à ossements; 0: sans ossement

Outre la dent humaine (*Homo sapiens*) rencontrée dans le secteur TU1, on a identifié 22 taxa, principalement des espèces sauvages et des espèces domestiques. Les espèces sauvages sont représentées généralement par des *Porphyrio* (Rallidae), *Anas hottentota* (Anatidae) et des poissons, alors que les espèces domestiques sont représentées par des animaux très connus à savoir les bovins (*Bos* sp.), les caprins (*Capra hircus*), les ovins (*Ovis ariens*) et les poulets (*Gallus gallus*) (cf. Tableau 2).

Tableau 2: Répartition des espèces à travers les différents carrés concernés

Classe	Famille	Espèces	Test Unit 1 (TU1 2-9)	Test Unit 2 (TU2 2-6)	Probing Pit (PP 2-25)
MAMMALIA	Hominidae	*Homo sapiens*	-	+	-
	Bovidae (Bovinae)	cf. *Bos* sp.	+	+	+
	Bovidae (Caprinae)	cf. *Capra hircus*	-	+	-
	Bovidae (Caprinae)	cf. *Ovis aries*	-	+	-
	Petit mammifères	Espèce (de la taille d'un Tenrec)	+	-	-
	Indéterminée	Indéterminée	-	+	+
AVES (Oiseau)	Phasianidae	cf. *Gallus gallus*	+	+	-
	Anatidae	Cf. *Anas platyrhynchos* (domestique)	+	-	-
	Anatidae	Cf. *Anas hottentota* (sauvage)	+	+	-
	Rallidae	cf. *Porphyrio porphyrio*	-	+	-
	Rallidae	Espèce indéterminée (de petite taille par rapport à *P. porphyrio*)	+	+	-
	Inconnu	Espèce.1 indéterminée (de taille moyenne)	+	+	-
	Inconnu	Espèce.2 indéterminée (de petite taille)	+	+	-
	Inconnu	Espèce.3 indéterminée (de petite taille)	-	+	-
REPTILIA	Testudinidae	*Aldabrachelys* sp.	+	+	+
	Testudinidae (terrestre)	Espèce 1 de tortue de grande taille	-	+	-
	Testudinidae (terrestre)	Espèce 2 de tortue de taille moyenne	+	+	+
	Testudinidae (terrestre)	Espèce 3 de tortue de petite taille	+	+	+
AMPHIBIA	Urodela	Espèce indéterminée se batracien	-	+	-
POISSONS	Ostéychyens	Espèce 1 (de petite taille)	+	+	+
	Ostéychyens	Espèce 2 (de taille moyenne)	-	+	+
	Ostéychyens	Espèce 3 (indéterminée)	-	+	+
	Ostéychyens	Espèce 4 (indéterminée)	-	+	+
	Chondrichtyes	Espèce de Raie indéterminée	-	+	-

+: présence; -: absence

En tout on a dénombré 1954 spécimens représentés par des petits fragments ostéologiques pesant environ 1060,8 g (1,061 kg) répartis dans les 12 carrés mentionnés précédemment à savoir: TU1 (total: 1188 fragments; 314,2 g), TU2 (total: 680 fragments, 653,5 g) et les 10 carrés dans le groupe des PP (en tout: 86 fragments; 93,1 g). Ces spécimens appartiennent à différents taxa: des Poissons, des Amphibiens, des Reptiles, des Oiseaux et des Mammifères. Pour la campagne de fouille en May 2019 dans le site de Kingay 2, la majeur partie des spécimens a été collectée dans les carrés TU1 et TU2. Une partie des spécimens ont été extraits dans tous les carrés « Probing Pit » dont l'ensemble des fragments ostéologiques ne représente qu'une quantité numérique et une masse (poids) faibles comparés à celle des carrés TU1 et TU2 respectivement.

2. Etude quantitative des spécimens ostéologiques

La fragmentation des os est si importante que le nombre d'individus minimal (NIM) est presque égale à un (01) et ne présente aucun intérêt dans une éventuelle analyse comparative entre les différentes associations biologiques le long des couches successives pour chaque carré de fouille. Le nombre de spécimens identifiés n'est pas exploitable du fait leur fragmentation alors, seul leur poids (en gramme) permet une caractérisation et une analyse comparative plus fiables pour chaque carré de fouille.

Tableau 3: Espèces identifiées dans les carrés de fouille TU1

Classe	Famille	Espèces	Nombre de spécimens	Poids (g) des spécimens
MAMMALIA	Bovidae	cf. *Bos*	9	13
MAMMALIA	Indéterminée	Espèce de petit mammifère (taille de Tenrec)	1	2
AVES	Phasianidae	cf. *Gallus gallus*	8	2
AVES	Anatidae	Cf. *Anas platyrhynchos* (domestique)	7	4
AVES	Anatidae	Cf. *Anas hottentota* (sauvage)	1	1
AVES	Indéterminée	Indéterminée	5	2
AVES	Rallidae	Espèce (plus petite que *P. porphyrio*)	13	7
AVES	Indéterminée	Espèce.1 indéterminée	10	4
AVES	Indéterminée	Espèce.2 indéterminée	1	1
REPTILIA	Testudinidae	*Aldabrachelys* sp.	23	62
REPTILIA	Testudinidae	Espèce de tortue terrestre de petite taille	8	3
REPTILIA	Testudinidae	3 espèces de tortue (% taille des carapaces)	34	52
POISSONS	Ostéychtyens	Espèces indéterminées	60	14
POISSONS	Osteychtyens	Diverses espèces	500	82
POISSONS	Osteychtyens	Indéterminée	7	2
POISSONS	Indéterminée	Différentes espèces	500	63
POISSONS	Indéterminée	Ostéychtyens	1	0,2

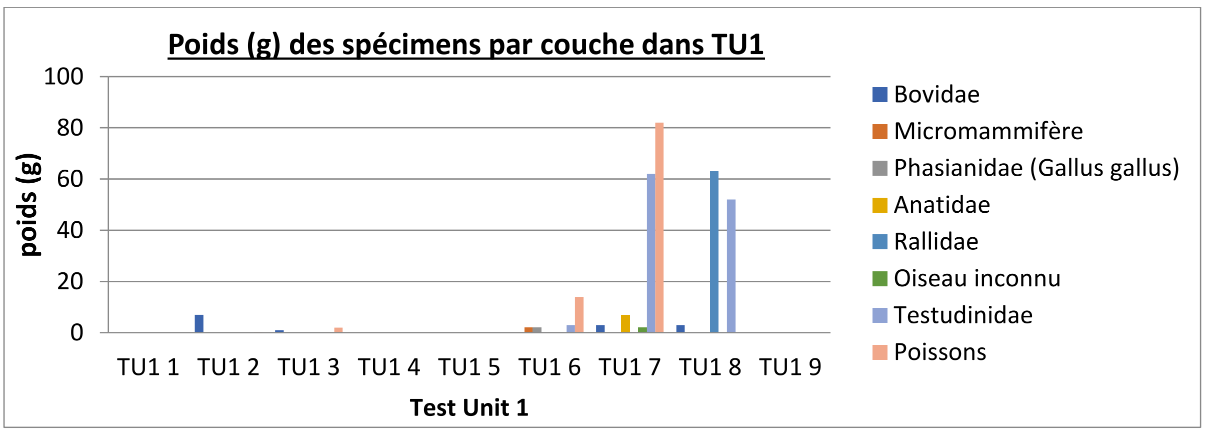
Tableau 4a: Répartition verticale des espèces dans le carré Test Unit 1

	Poids (g) des spécimens								
Test Unit 1	**TU1 1**	**TU1 2**	**TU1 3**	**TU1 4**	**TU1 5**	**TU1 6**	**TU1 7**	**TU1 8**	**TU1 9**
Taxa									
Bovidae (Bovinae/Caprinae)	-	+	+	-	-	-	+	+	-
Micromammifère	-	-	-	-	-	+	-	-	-
Phasianidae (*Gallus gallus*)	-	-	-	-	-	+	-	-	-
Anatidae (*Anas* sp.)	-	-	-	-	-	-	+	-	-
Rallidae (*Porphyrio porphyrio*)	-	-	-	-	-	-	-	+	-
Espèce d'oiseau inconnu	-	-	-	-	-	-	+	-	-
Testudinidae	-	-	-	-	-	+	+	+	-
Poissons	-	+	+	-	-	+	+	-	-

+: présence; -: absence

Les espèces les plus représentées le long du carré TU1 sont les poissons, les tortues terrestres et les Bovidae (cf. *Bos*). L'évolution de la quantité respective de ces espèces marque une dynamique soit de leur usage, soit de leur existence (Graphe 1).

Graphe 1: Poids des spécimens dans TU1



En effet, les petits fragments d'ossement collectés n'ont permis que leur identification et non l'évaluation de leur nombre d'individu par espèce. Dans le Tableau 3, on observe que les restes sont plus abondants dans les couches supérieures, plus récentes. Cela aurait attribué une occupation humaine tardive avec un épanouissement plus développée dans le milieu avec des activités diversifiées, élevage, chasse et pêche.

Tableau 4b: Répartition des espèces au sein du carré Test Unit 2

Taxa	Test Unit 2					
	TU2 1	**TU2 2**	**TU2 3**	**TU2 4**	**TU2 5**	**TU2 6**
Hominidae	-	-	-	+	-	-
Bovidae	-	+	+	+	-	+
Micromammifère	-	-	-	-	-	-
Phasianidae (*Gallus gallus*)	-	-	-	-	-	-
Anatidae	-	-	-	-	+	-
Rallidae	-	-	-	+	-	-
Inconnu	-	-	+	-	-	-
Testudinidae	-	+	+	+	+	-
Amphibia	-	-	-	-	+	-
Poissons	-	+	+	+	+	+

+: présence; -: absence

Dans cette liste, les bovidés (dans les couches TU2 2, TU2 3, TU2 4 et TU2 6) et les tortues terrestres (couches TU2 2, TU2 3, TU2 4 et TU2 5) ainsi que les poissons (dans toutes les couches sauf le TU2 1) dominent. D'ailleurs, leurs poids représentent un élément pour mettre en évidence l'évolution de la présence ou l'absence des taxa le long des couches (Graphe 2).

Graphe 2: Poids (g) des spécimens dans le carré Test Unit 2

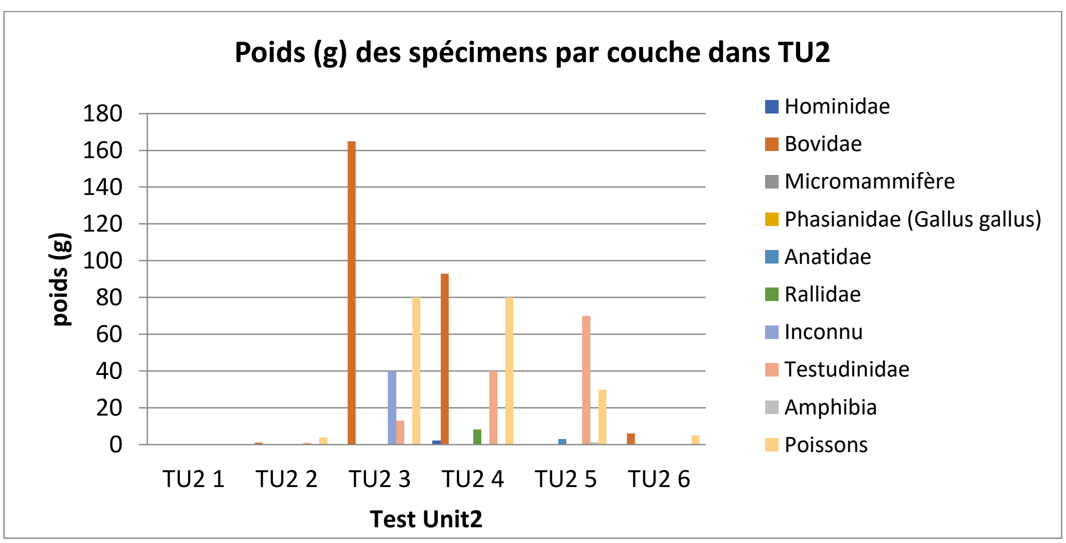


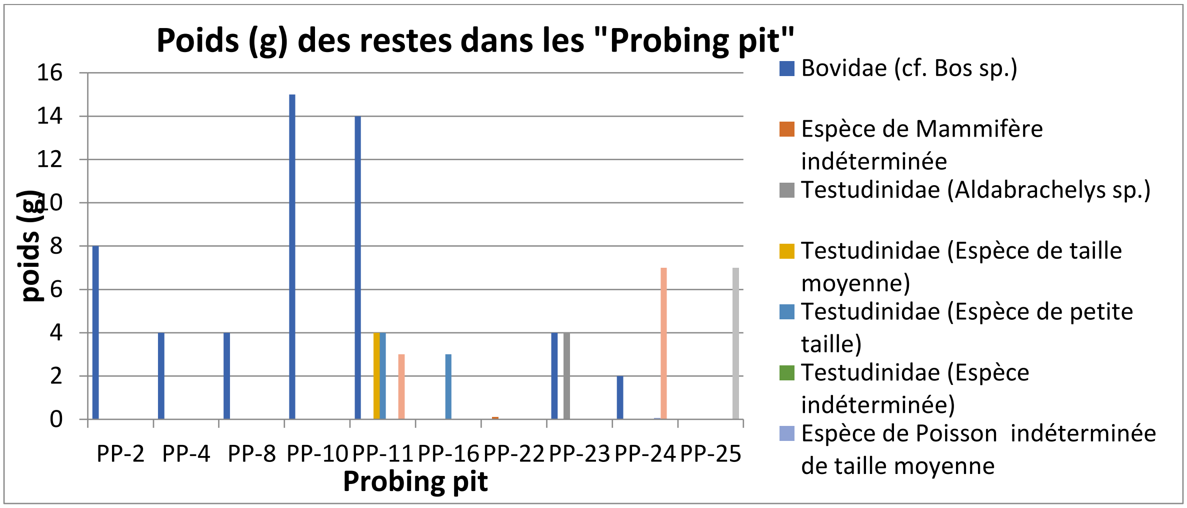
Tableau 5: Répartition des espèces identifiées dans les carrés de fouille dits « Probing Pit » (PP)

Famille	Espèces	PP 2	PP 4	PP 8	PP 10	PP 11	PP 16	PP 22	PP 23	PP24	PP25
Bovidae	Bovidae (cf. *Bos* sp.)	+	+	+	+	+	-	-	+	+	-
Indéterminée	Espèce de Mammifère indéterminée	-	-	-	-	-	-	+	-	-	-
Testudinidae	Testudinidae (*Aldabrachelys* sp.)	-	-	-	-	-	-	-	+	-	-
Testudinidae	Testudinidae (Espèce de taille moyenne)	-	-	-	-	+	-	-	-	+	+
Testudinidae	Testudinidae (Espèce de petite taille)	-	-	-	-	+	+	-	-	-	-
Testudinidae	Testudinidae (Espèce indéterminée)	-	-	-	-	-	-	-	-	-	-
Ostéychtyes	Espèce de Poisson indéterminée de taille moyenne	-	-	-	-	-	-	-	-	+	-
Ostéychtyes	Espèce de Poisson osseux indéterminée de petite taille	-	-	-	-	+	-	-	-	+	-
Ostéychtyes	Espèce de poisson indéterminée de petite taille	-	-	-	-	-	-	-	-	-	+

+: présence; -: absence

Pour les carrés dits « Probing Pit », le Tableau 5 atteste un poids très faible pour chaque taxon, allant de 0,05 g (cas des restes de poissons osseux dans le PP 24) jusqu'à 15 g, cas des restes de Tortue terrestre (Testudinidae) de taille moyenne dans le PP 15, ou cas des Bovidae (*Bos* sp.) dans le PP10. L'espèce la plus commune dans ces carrés « Probing Pit » est le *Bos* sp. avec 51g de spécimens, suivi des tortues terrestres dont le poids total est de 21g.

Graphe 3: <u>Importance quantitative des restes ostéologiques dans les carrées « Probing Pit »</u>



Les bœufs constituent une espèce presque commune des carrés du groupe des « Probing Pit ». Ainsi, vu que cette espèce soit également la plus commune dans les deux autres types de carrés, TU1 et TU2, son étude quantitative intéresse l'analyse comparative au sein de l'ensemble du site Kingany.

Déduction

Les associations faunistiques déterminées à partir des espèces faunistiques issus du site de Kingany attribuent au milieu une cohabitation entre des espèces domestiques et des espèces sauvages. Cela suppose que la population qui y vivait aurait dû pratiquer l'élevage d'animaux domestiques et la chasse aux animaux sauvages terrestres et la pêche aux poissons probablement marins du fait de la position du site à proximité de la mer. En effet, cette population aurait dû également introduire dans le lieu de telles espèces domestiques. Particulièrement, les carrés « Probing Pit », des fouilles de surface confirment que la dernière population de Kingany occupait la zone récemment tout en gardant les mêmes activités qu'elle aurait menées depuis les périodes de son implantation sur le lieu.

Néanmoins, par rapport aux carrées de fouille Test Unit 1 et Test Unit 2, les activités ont évolué et l'importance de ces activités ont dû avoir des changements au cours du temps. Mais toujours, la combinaison entre l'élevage bovin, la chasse aux tortues terrestres et la pêche aux poissons marins est presque permanente. La chasse aux tortues est-elle due à l'existence de ces reptiles sur place ou est-ce que la population les avait-elle cherchées plus loin. La situation de ces tortues pourra aider à revoir cette activité. Particulièrement, si on se réfère à *Aldabrachelys* sp., qui est une espèce de tortue géante disparue de Madagascar, d'une part, la population faisait donc partie de celles qui l'ont rencontrée pour la dernière fois. Et d'autre part, si on se réfère sur l'ancienne espace vitale des deux espèces de tortue géante de Madagascar, l'espèce rencontrée dans le site de Kingany serait donc *Aldabrahelys abrupta*.

Appendix IV: Diagnostic Ceramic Analysis Supplementary Data

Code Key: C=Coarse; **CC**=Charcoal; **CF**=Grog; **CS**=Chlorite Schist; **ELB**=Exterior Light Burning; **F**=Fine; **G**=Grainy; **ILB**=Interior Light Burning; **M**=Medium; **MC**=Mica; **MF**=Medium-Fine Inclusions; **R**=Reduced; **SH**=Shell; **V**=Void.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
PP1.1	C	46.2	58.2	7.7	31.6	Rim	Circular punctates	R, MF (Quartz)	Orangish-Brown	C - M	16	In-turned, flat	Closed Bowl	
PP2.1	C	53.1	55.3	7.6	25.2	Body	Burnished (Exterior), smoothed (Interior)	R, MF	Grey-Brown	M	-	-	Carinated Bowl	
PP2.2	A	17.6	19.1	8.9	3.7	Body	Triangular punctates, red slip (exterior)	MF	Yellowish-Light Brown	C - M	-	-	-	
PP4.1	C	26.9	52.2	5.9	10.4	Rim	Brown burnish (exterior)	ILB, V, MF	Grey-Reddish-Brown	M	10	In-turned, simple	Closed Bowl	
PP4.2	A	16.3	19.5	6.1	1.9	Body	Triangular punctates, smoothed	ILB, R, MF (Quartz)	Greyish-Brown	M	-	-	-	Conjoinable with PP4.3-4
PP4.3	A	16.4	17.8	6.1	2.3	Body	Triangular punctates, smoothed	ILB, R, MF (Quartz)	Greyish-Brown	M	-	-	-	Conjoinable with PP4.2 & PP4.4
PP4.4	A	10.6	14.3	5.9	1.5	Body	Triangular punctates, smoothed	ILB, R, MF (Quartz)	Greyish-Brown	M	-	-	-	Conjoinable with PP4.2-3
PP5.1	C	46.5	51.4	9.4	26.8	Rim	Grooved (Exterior), burnished (Interior), soot (Exterior)	ELB, V, MF	Dark-Reddish-Brown	M	29	Out-turned, lip-in	Bowl	Dark brown burnish
PP5.2	B	26.1	34.9	6.4	7.9	Rim	Burnished (Exterior), smoothed (Interior)	R, V, MF	Dark Brown	C - M	26	In-turned, simple	Closed Bowl	Dark brown burnish
PP5.3	B	45.1	46.5	12.4	23.6	Rim	Burnished (both)	CF, G, R, MF (Quartz)	Grey-Black	C	-	Out-turned, lip-in	Shallow Dish	Angular
PP5.4	A	14.2	16.6	7.2	2.2	Rim	Triangular punctates	R, MF (Quartz)	Greyish-Light Brown	M	-	Tapered	-	
PP5.5	A	21	23.1	7.4	3.5	Rim	-	ELB, G, MF	Dark Brown	C	-	Tapered-in	-	Irregular
PP5.6	A	9.4	14.9	6.9	1.2	Body	Triangular Punctates	R, MF (Quartz)	Orangish-Light Brown	M	-	-	-	
PP5.7	A	11.4	16.1	6.1	1	Rim	Smoothed (Interior)	G, R, MF	Reddish-Brown	C	14	Flat	Lid	Conjoins with PP5.9
PP5.8	A	12.7	16.8	4.8	1.1	Body	Triangular punctates, burnished (Exterior)	MF	Pinkish-Orange	M - F	-	-	-	
PP5.9	A	13	18.7	8.8	1.7	Rim	Smoothed (Interior)	CF	Reddish-Brown	C	14	Flat	Lid	Conjoins with PP5.7
PP5.10	B	20.7	28.2	7	4.5	Rim	Red slip (Exterior), burnished (Interior)	V, R, MF	Grey-Black	M - F	-	In-turned, tapered-out	-	
PP5.11	B	16.4	25	9.7	3.2	Body	Mat impressed, smoothed (Exterior)	V, MF (Quartz)	Pinkish-Orangish-Brown	C	-	-	Lid	
PP6.1	C	38.1	52.6	7.3	14.1	Body	Wavy decoration, smoothed (Interior)	R, MF (Quartz)	Yellowish-Brown	M	-	-	-	Possible Yemeni Incense Burner
PP6.2	C	44.1	52.7	11.9	44.7	Rim	Burnished (Interior), red slip (Exterior)	CF, R, MF	Greyish-Brown	C - M	27	Out-turned, simple	Jar	
PP6.3	B	21.2	24.1	8.2	5.7	Body	Wavy decoration	ILB, G, MF	Reddish-Brown	M	-	-	-	
PP6.4	A	20.5	24.4	6.4	3.7	Rim	Burnished (Interior), red slip (Exterior)	ILB, MF (Quartz)	Reddish-Brown	M - F	16	Out-turned, tapered-out	-	
PP6.5	B	24.8	26.5	10.9	7.4	Rim	Red slip (both)	G, R, V, MF	Light Orangish-Brown	C - M	-	Out-turned, flat	-	
PP7.1	B	24.9	25.9	8.3	5.6	Body	Herring bone incisions	R, MF (Quartz)	Reddish-Brown	M	-	-	-	TIW
PP7.2	A	10.1	19.6	7.2	1.3	Rim	Oxidized	R, MF	Yellowish-Brown	C	-	Out-turned, lip-out	-	
PP7.3	A	17.4	19.3	6.5	2.5	Rim	-	CF, G, MF (Quartz)	Reddish-Brown	C	-	Simple	-	
PP8.1	A	15.7	18.4	4.5	1.6	Rim	Burnished (both)	R, MF	Pinkish-Orange-Brown	M	-	Out-turned, simple	-	
PP8.2	B	23.5	31.7	6.7	6.8	Body	Triangular punctates, parallel lines, burnished (Interior)	ILB, MF	Greyish-Brown	C - M	-	-	-	
PP8.3	B	15.3	26.2	6.2	3.2	Body	Wavy relief (Exterior), Burnished (Interior)	ILB, MF (Quartz)	Light-Brown	C - M	-	-	-	
PP8.4	B	24.9	25.2	6.8	4.7	Rim	Smoothed (both)	ILB, R, MF	Reddish-Orange-Brown	M	-	Out-turned, simple	-	
PP8.5	B	18.2	25.2	8.5	3.1	Rim	Black slip (both)	CF, R, MF	Pinkish-Orange-Brown	C - M	17	Out-turned, flat	Jar	Conjoinable with PP8.6
PP8.6	E	62.3	99.1	11.5	89.1	Rim	Black slip (both)	CF, R, MF	Pinkish-Orange-Brown	C - M	17	Out-turned, flat	Jar	Conjoinable with PP8.5

Table 1: Diagnostic ceramic analysis: PP1 - PP8.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
PP9.1	A	20.6	24.6	14.6	5.2	Rim	Oxidized	SH, V, R, MF	Pinkish-Orange	C	15	Out-turned, flat	Jar	
PP9.2	B	39.1	42.4	10	13.5	Body	Diagonal incisions, smoothed	MF	Orangish-Pinkish-Brown	F	-	-	-	
PP9.3	B	31.7	40.1	8	12.1	Rim	Burnished (Exterior)	CF, G, R, MF	Pinkish-Orange-Brown	F	22	In-turned, tapered-out	Bowl	
PP9.4	A	15.9	17.4	13.2	1.8	Rim	Oxidized	R, V, MF	Pinkish-Orange	C	-	Out-turned, flat	-	
PP9.5	A	19.5	21.2	8	2.3	Rim	Smoothed (Interior)	R, MF	Grey-Black	M	-	Out-turned, tapered-out	-	
PP9.6	A	9.3	19.8	8.1	1.7	Rim	Smoothed (Interior)	CF, MF (Quartz)	Brown	C	-	Lip-out	-	
PP10.1	E	93	108.4	7.3	116.5	Rim	Triangular punctate bands, burnished (both)	MF	Greyish-Reddish-Brown	F	23	In-turned, simple	Shallow Bowl	
PP10.2	C	56.6	57.6	10.9	40.8	Rim	Red slip (both)	ILB, R, MF (Quartz)	Pinkish-Orange	C - M	27	In-turned, tapered-out	Closed Bowl	
PP10.3	A	16.8	18.5	7.9	2.1	Rim	Triangular punctates	ILB, MF (Quartz)	Pinkish-Orange	C - M	-	Out-turned, flat	-	
PP10.4	B	24.6	26.1	7	4	Rim	Triangular Punctates, burnished (interior)	ILB, R, MF	Pinkish-Orange	C - M	37	Out-turned, lip-in	Bowl	Conjoinable with PP10.5 & PP10.8
PP10.5	A	13.1	17.9	6.9	2	Rim	Triangular Punctates, burnished (interior)	ILB, R, MF	Pinkish-Orange	C - M	37	Out-turned, lip-in	Bowl	Conjoinable with PP10.4 & PP10.8
PP10.6	B	42.7	47.6	9	16.5	Body	Red slip (both)	R, V, MF	Grey-Brown	C - M	-	-	Carinated Bowl	
PP10.7	A	13.4	23.2	5.6	2.5	Rim	Smoothed (exterior)	V	Pinkish-Orange	M	-	In-turned, tapered-out	-	
PP10.8	A	15.9	19.8	6.9	2.2	Rim	Triangular Punctates, burnished (interior)	ILB, R, MF	Pinkish-Orange	C - M	37	Out-turned, lip-in	Bowl	Conjoinable with PP10.4-5
PP10.9	A	11.8	15.7	5.7	1.2	Body	Triangular punctates, red slip (both)	G, MF	Greyish-Reddish-Brown	C - M	-	-	-	
PP10.10	B	29.4	36.6	6.7	9	Body/Base	Burnished (Interior), red slip (Exterior)	R, MF	Reddish-Brown	F	-	-	-	
PP10.11	B	19.6	26.7	6.4	4	Rim	Burnished (both)	R, V, MF	Grey-Black	M	-	Simple	-	
PP10.12	B	31.2	32.4	6.5	7.2	Shoulder	Smoothed (exterior)	MF	Pinkish-Light Orange	M	-	-	-	
PP11.1	C	52.2	53.9	10.4	29.7	Rim	Diagonal incisions, red slip (both), oxidized	ILB, SH, R, V, MF	Pink-Orange	C - M	39	In-turned, flat	Wide Bowl	
PP11.2	B	42.1	46.4	8.2	16.7	Rim	Burnished (both)	MF (Quartz)	Grey-Black	M	21	In-turned, simple	Bowl	
PP11.3	B	29.6	31.2	8.1	8.6	Rim	Burnished (both)	MF, V	Light Orange-Brown	C - M	18	Out-turned, simple	Bowl	
PP11.4	B	24	25	8.6	6.5	Rim	Red slip (Exterior)	R, CF, G, V, MF (Quartz)	Pinkish-Light Orange	M	-	Out-turned, tapered-out	Jar	
PP11.5	B	24.1	35.4	8.4	10	Body	Burnished	ILB, CC, MF	Orangish-Light Brown	M - F	-	-	-	
PP11.6	A	17.9	21.2	6.9	3.3	Rim	Triangular punctates	V	Dark Brown	M	-	In-turned, tapered-out	-	
PP11.7	A	15.7	16.8	5.7	1.5	Rim	Burnished	MF (Quartz)	Grey-Brown	M	-	In-turned, simple	-	
PP11.8	A	17.2	22.1	8.8	3.9	Rim	Smoothed	MF (Quartz)	Greyish-Brown	M	-	Out-turned, simple	-	
PP11.9	B	27.7	29.9	7	6.8	Rim	Burnished	CF, MF	Grey-Black	M	20	Out-turned, simple	-	
PP11.10	B	27.1	27.5	9.6	7.4	Rim	red slip, smooth (Exterior)	SH, V, R, MF	Pinkish-Orange	C - M	-	In-turned, simple	Jar	
PP11.11	B	21.2	28.4	7.5	5.6	Body	Wavy decoration, smoothed (Interior)	G, MF (Quartz)	Brown	M	-	-	-	

Table 2: Diagnostic ceramic analysis: PP9 - PP11.11.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
PP11.12	A	16.8	20.5	9	3.8	Rim	Irregular	ILB, G, CF	Grey-Brown	M	-	In-turned, lip-in	-	
PP11.13	A	12.7	21.5	7.4	2.5	Rim	Burnished (Interior), red slip (Exterior)	CF, MF (Quartz)	Grey-Brown	M	-	Out-turned, flat	-	
PP11.14	A	11.8	14.2	5.3	0.9	Rim	Smoothed	MF	Greyish-Brown	M - F	12	Out-turned, flat	Cup	
PP11.15	A	19	24.8	14.4	6.7	Body	Burnished (both)	G, MF	Brownish-Red	C	-	-	Carinated Bowl	
PP11.16	A	8.1	8.9	6	0.6	Rim	Oxidized	ILB	Grey-Brown	M	-	-	-	
PP11.17	A	16.2	19.7	9.3	2.1	Rim	-	SH, R, MF (Quartz)	Reddish-Orange	C	-	Out-turned, simple	-	
PP11.18	A	12.2	17.2	7.6	1.2	Rim	Smoothed (Interior)	ILB, MF	Greyish-Brown	C - M	-	Out-turned, simple	-	
PP11.19	A	9.8	14.4	7	0.7	Rim	Smoothed (Interior)	MF	Pinkish-Orange	C - M	-	Simple	-	
PP12.1	A	10.7	15.1	6.4	1.2	Rim	Triangular incisions, burnished (both)	R	Grey-Black	F	-	In-turned, simple	-	
PP12.2	B	21.8	44.6	7	9.6	Neck	Burnished (Exterior)	R, MF	Pinkish-Orangish-Brown	M	-	-	-	
PP12.3	A	18.1	19.4	6.2	2.4	Rim	Burnished (Exterior)	V, MF (Quartz)	Pinkish-Orange-Brown	C - M	6	In-turned, tapered-out	Closed Bowl	
PP12.4	B	34.7	44.2	16.2	23.2	Unique	-	R, MF (Quartz)	Orangish-Brown	C	-	-	Tuyères	
PP13.1	B	29.5	31.6	19.2	19.3	Foot	-	R, MF	Pinkish-Orange-Brown	C	-	-	-	Oval shaped
PP13.2	C	50.7	72	7.4	35.4	Body	Red slip (both), brushed (Exterior), smoothed (Interior)	V, MF	Orangish-Brown	F	-	-	-	
PP13.3	B	32.9	48.9	6.9	12.7	Rim	Burnished (Exterior), smoothed (Interior)	G, MF	Light Brown	M	20	In-turned, tapered-out	Bowl	
PP13.4	B	28.7	32.9	12.1	13.3	Rim	Burnished (both)	G, MF	Pinkish-Orange-Brown	F	19	In-turned, lip-in	-	
PP13.5	B	24.5	25.7	6.9	5.2	Rim	Burnished (both)	G, R, MF	Orangish-Brown	C - M	9	In-turned, tapered-in	Closed Bowl	
PP13.6	B	16.9	27	11.7	6	Rim	Burnished (Exterior)	G, R, MF (Quartz)	Orangish-Brown	M	-	Out-turned, tapered-out	-	
PP14.1	B	45.3	47.6	6.6	31.1	Rim	Parallel lines	CS, R, MF	Grey-black	F	14	Out-turned, tapered-out	Bowl	Made to imitate chlorite-schist vessel
PP14.3	B	16.6	31.3	6.1	4.2	Body	Triangular punctates	ILB, MF	Pinkish-Brown	M - F	-	-	-	
PP14.4	A	9.4	14.1	5.5	0.8	Rim	Triangular punctates	ILB, G, MF	Dark-Reddish-Brown	C - M	-	Simple	-	
PP14.5	B	21.2	31.5	7.5	6.7	Rim	Burnished (Interior)	CF, MF	Greyish-Reddish-Brown	M	-	Simple	Shallow Dish	
PP14.6	B	27.7	36.4	7.3	12.8	Rim	Burnished (Exterior)	R, MF (Quartz)	Grey-Reddish-Brown	C - M	20	In-turned, simple	-	
PP14.7	B	38	45.4	8.5	22.1	Rim	Burnished (Interior), smoothed (Exterior)	MF (Quartz)	Pinkish-Brown	M	21	Out-turned, tapered-out	Bowl	
PP15.1	A	23.5	24.2	6.8	1.9	Rim	Oxidized, smoothed	R, MF	Yellowish-Orange	C	-	-	-	
PP15.2	B	41.6	47.7	10.3	24.7	Base	Burnished (Interior)	ILB, CF, MF, CC	Greyish-Brown	C	-	Out-turned	Footed Dish	
PP17.1	B	32.1	35.3	6.9	10.3	Rim	Smoothed (both)	G, R, MF (Quartz)	Dark-Reddish-Brown	C - M	25	In-turned, simple	Closed Bowl	
PP17.2	A	11.4	13.4	6.1	1.4	Rim	Smoothed (both)	MF (Quartz)	Brown	M - F	-	Simple	-	
PP17.3	B	43.4	44.5	13.9	18.3	Lid	Smoothed (exterior)	CF, V, R	Reddish-Orange-Brown	M	-	Tapered	-	Grooved edge

Table 3: Diagnostic ceramic analysis: PP11.12 - PP17.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
PP20.1	B	28.7	35.9	14.2	13.2	Rim	Burnished (Interior), smoothed (Exterior)	CF, MF	Greyish-Brown	M - F	30	In-turned, flat	Bowl	
PP20.2	A	14.8	15.9	6.1	1.4	Rim	-	R, MF (Quartz)	Pinkish-Orangish-Brown	C	-	Lip-out	-	Fragment
PP20.3	B	38.8	53.6	9.2	16.5	Body	Soot (both)	G, R, MF	Orange-Brown	C - M	-	-	-	Shoulder (?)
PP22.1	B	24.8	34	9.6	6.3	Rim	Oxidized, red slip (both)	SH, R, MF	Pink-Orange	C	27	Out-turned, lip-out	-	
PP22.2	B	33.2	42.7	9.2	17.7	Rim	Burnished (Exterior)	CC, MF (Quartz)	Reddish-Brown	M	16	In-turned, tapered-out	Jar	
PP22.3	C	46.5	73.5	8.1	35.5	Body	Burnished (Exterior), smoothed (Interior)	ILB, R, MF (Quartz)	Grey-Brown	M	-	-	-	
PP22.4	B	25.4	43.2	9.2	12.9	Body	Burnished (Exterior), smoothed (Interior)	SH, CC, MF (Quartz)	Reddish-Brown	M	16	In-turned, tapered-out	Jar	
PP22.5	B	22.5	33.3	8.8	7.7	-	-	G, MF (Quartz)	Red-Dark Brown	M	-	-	Spacer	Broken into 3 conjoinable pieces
PP23.1	B	21.8	25.5	9.7	6.1	Rim	Smoothed (Interior)	ILB, V	Brown	C	-	Out-turned, simple	-	
PP23.2	B	23.6	27.3	7.3	6.7	Body	Triangular punctates, red slip (exterior)	R, MF	Greyish-Brown	M	-	-	-	
PP23.3	B	24.9	36	8	9.1	Rim	Smoothed (Interior)	CF, R, MF (Quartz)	Orange-Brown	M	22	Out-turned, tapered-out	Jar	
PP23.4	A	11.6	14.5	9.4	2	Rim	Smoothed (both)	G, R, MF (Quartz)	Grey-Black	M	-	Out-turned, simple	-	Fragment
PP23.5	A	14.1	20.8	8.5	3.4	Rim	Smoothed (both)	G, R, V, MF (Quartz)	Grey-Black	M	-	Out-turned, simple	-	
PP23.6	A	13.7	17.7	8.6	2	Rim	Smoothed (both)	R, MF	Pinkish-Orange	M	-	Out-turned, flat	-	
PP23.7	B	17.4	27.4	10	4.9	Rim	Burnished	R, V, MF	Grey-Brown	F	-	In-turned, lip-in	-	
PP23.8	B	21.8	28.7	8.8	7.2	Rim	Punctates, red slip (both)	V, MF	Grey-Brown	M	-	Out-turned, tapered-out	Jar	
PP23.9	A	14.3	20.3	5.9	2.5	Rim	Burnished (both)	R, MF	Orangish-Brown	M	-	In-turned, simple	-	
PP23.10	B	30.3	34.7	7.1	9.9	Rim	Black slip (both)	R, MF	Pinkish-Orange	F	-	In-turned, simple	Jar	
PP23.11	B	31.6	37.6	9.9	13.7	Rim	Burnished (both)	CF, R, MF	Orange-Brown	M - F	15	Out-turned, simple	Shallow Dish	
PP24.1	B	39.7	47.6	9.9	22.3	Rim	-	G, V, R, MF (Quartz)	Orange-Brown	M	32	In-turned, lip-out	Bowl	
PP24.2	B	33	40.5	10.4	15.8	Rim	Smoothed	ILB, CF, R, MF (Quartz)	Dark-Reddish-Brown	C	13	In-turned, tapered-out	Bowl	
PP24.3	B	23.9	31.8	6.1	6.1	Body	Pierced, burnished (both), oxidized	R, MF	Pinkish-Orange	M	-	-	-	
PP24.4	A	15.2	17.9	6.7	1.9	Rim	Smoothed (both)	ILB, V	Greyish-Brown	C - M	-	Out-turned, tapered-out	-	
PP24.5	A	10.3	15.4	6.8	1.1	Rim	Smoothed (both)	CF, G, R, MF (Quartz)	Grey-Brown	C	-	Tapered	-	
PP24.6	A	13.7	23.8	9.7	3.4	Rim	Burnished (Interior)	R, MF	Grey-Brown	M	-	In-turned, flat	-	
PP24.7	A	10.8	15.1	5.9	0.8	Rim	Burnished (both)	R, MF	Pinkish-Orange-Brown	M	-	In-turned, tapered	-	
PP24.8	A	13.1	21.9	6.5	2.5	Rim	Black slip, smoothed	CF, MF	Grey-Brown	M - F	-	-	-	
PP24.9	B	30.3	45	7.9	11.7	Body	Triangular punctates	G, MF (Quartz)	Greyish-Brown	F	-	-	-	
PP24.10	B	36.1	44.4	7.1	10.9	Rim	Roulette bands	SH, R, MF	Orangish-Brown	F	-	Out-turned, simple	Bowl	
PP24.11	C	39.7	65.2	8.9	29.5	Rim	Shell impressed arches, burnished (Exterior)	ILB, CF, R, V, MF (Quartz)	Reddish-Greyish-Brown	M	19	In-turned, simple	Jar	

Table 4: Diagnostic ceramic analysis: PP20 - PP24.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
PP25.1	A	12.3	18.8	9.1	2.3	Handle	Oxidized, Black slip (Exterior)	V, R, MF	Pinkish-Orange	C	-	-	-	Conjoinable with PP25.2
PP25.2	A	12.3	16.9	7.1	1.9	Handle	Oxidized, Black slip (Exterior)	V, R, MF	Pinkish-Orange	C	-	-	-	Conjoinable with PP25.1
PP25.3	B	24.7	33.4	10.9	9.8	Body	Scraped (Both)	G, MF	Dark Brown	M	-	-	-	
PP25.4	B	24.7	28.4	8.2	6.8	Body	Pierced , Brown burnish (Exterior), Smoothed (Interior)	G, R, MF	Orangish-Brown	C-M	-	-	-	
PP25.5	A	14.1	23.3	10.1	2.8	Body	Oxidized, Scraped (Exterior)	SH, CF, V, R, MF	Yellowish-Brown	C	-	-	-	
PP25.6	A	12.1	14.5	6.5	1.1	Body	Incised	R, MF (Quartz)	Red-Brown	C	-	-	-	
PP25.7	A	11.2	13.3	5.8	1	Rim	-	R, MF	Reddish-Orange-Brown	C	-	Simple	-	
PP25.8	A	8.7	12	5.7	0.4	Rim	Smoothed (Interior)	CC, R, MF	Orangish-Brown	C	-	Lip-out	-	
PP25.9	A	13.2	13.2	7.6	1.7	Rim	-	MF	Dark Brown	M	-	Out-turned, lip-out	-	
PP25.10	A	15.3	20.3	6.4	2.2	Rim	-	G, R, MF (Quartz)	Grey-Brown	C	-	In-turned, simple	-	Conjoinable with PP25.23
PP25.11	A	17.8	23.1	5.6	2.6	Rim	-	ELB, MF	Grey-Black	M	-	SImple	-	
PP25.12	A	9.2	14.4	5.6	0.9	Rim	-	G, R, MF	Brown	C-M	-	Tapered	-	
PP25.13	A	14.9	17.1	7.2	2.1	Rim	-	R, MF	Light Brown	M	-	In-turned, flat	-	
PP25.14	A	9.9	14.5	7.6	1.2	Rim	Smoothed (Both)	G, MF	Dark Brown	C	-	Flat	-	Angular
PP25.15	A	13.1	19.7	8.2	1.5	Rim	-	G, MF	Reddish-Brown	C	-	Lip-Out	-	
PP25.16	A	11.4	17.5	5.4	1.5	Rim	Smoothed (Interior)	G, R, MF	Orangish-Brown	C-M	-	Out-turned, simple	-	
PP25.17	A	12.5	13.2	6.1	1.1	Rim	Oxidized	MF	Pinkish-Orangish-Brown	C	-	Out-turned, lip-out	-	
PP25.18	A	16.2	19.1	9.5	2.7	Rim	Black burnish (Both)	ILB, CF, MF (Quartz)	Reddish-Orange-Brown	C	-	Out-turned, tapered	-	
PP25.19	A	12.2	14	7.1	1.6	Rim	Burnished (Exterior)	CF, R, MF	Dark Brown	C-M	-	In-turned, tapered-in	-	
PP25.20	A	14.8	16.5	7.3	2.5	Rim	-	G, V, MF	Orangish-Brown	C	-	Simple	-	
PP25.21	A	18.2	21.3	6.1	2.8	Rim	Smoothed (exterior)	R, MF (Quartz)	Orangish-Brown	C-M	-	In-turned, simple	-	
PP25.22	A	18.5	20.7	9.9	4.2	Rim	Red slip (Interior)	CC, G, MF (Quartz)	Greyish-Light Brown	M	-	In-turned, tapered	-	
PP25.23	A	16.1	18.8	6.9	2.4	Rim	-	G, R, MF (Quartz)	Greyish-Brown	C	-	In-turned, simple	-	Conjoinable with PP25.10
PP25.24	A	15.6	18.3	8.8	3	Rim	Red slip (Both)	CF, G, R, MF (Quartz)	Orangish-Brown	C	-	Simple	-	
PP25.25	A	17.1	19.2	7.8	2.9	Rim	Smoothed (exterior)	G, MF	Pinkish-Brown	C-M	-	In-turned, flat	-	
PP25.26	A	20.4	24.9	9.1	4.4	Rim	Black burnished (Exterior), Smoothed (Interior)	R, MF	Orangish-Brown	C-M	-	In-turned, tapered-out	-	
PP25.27	B	15.4	39.7	9.4	5.6	Rim	Smoothed (Both)	MF (Quartz)	Reddish-Orange-Brown	C	17	Out-turned, flat	Jar	
PP25.28	B	24.1	25.8	10.1	6.5	Body	-	G, V, MF (Quartz)	Brown	C	-	In-turned, lip-in	Shallow Dish	
PP25.29	B	23.6	32	13	10.8	Rim	Red slip (Exterior), smoothed (Interior)	ILB, CF, G, MF	Orangish-Brown	C	-	Out-turned, lip-in	-	
PP25.30	B	25.8	26.8	6.6	6.9	Rim	-	G, R, MF (Quartz)	Grey-Black	C	-	Out-turned, simple	-	

Table 5: Diagnostic ceramic analysis: PP25.1 - PP25.30.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
PP25.31	B	23	26.2	6	4.9	Rim	Dark brown burnish (Exterior)	R, MF (Quartz)	Grey-Black	C-M	-	In-turned, simple	-	
PP25.32	B	33.9	33.9	6.3	8.6	Rim	Brown slip (Exterior)	CF, R, MF	Pinkish-Orange-Brown	C	19	In-turned, tapered-out	Closed Bowl	
PP25.33	B	28.4	38.2	5.9	6.7	Rim	Wavy incisions, smoothed (Interior)	SH, V, R, MF (Quartz)	Orange-Brown	M	14	In-turned, tapered-out	Bowl	
PP25.34	A	14.3	16.7	9.4	1.7	Lid	Grooved edge	G, R, MF	Orangish-Brown	C	-	Out-turned, tapered	Lid	
PP25.35	C	35.5	62.2	23.6	35.3	Foot	Smoothed (Interior), scraped (Exterior)	CC, G, R, MF (Quartz)	Pinkish-Orange-Brown	C	5	Out-turned,tapered-out	Footed Dish	
PP25.36	B	28.7	39.1	13.5	16.2	Foot	Crude	ILB, CC, V, MF	Pinkish-Orange-Brown	C	17	Out-turned, tapered-out	Footed Dish	
PP25.37	B	20.5	25.4	15.6	8.4	Foot	Smoothed (Both)	CF, G, R, MF (Quartz)	Pinkish-Orangish-Brown	C	-	-	Footed Dish	
TU1-2.1	B	16.2	33	7	4.8	Rim	Red slip (both)	ILB, MF (Quartz)	Grey-Brown	M	16	In-turned, lip-out	Bowl	
TU1-2.2	B	39.4	39.6	7	14.7	Body	Triangular punctates, smoothed	MF	Grey-Reddish-Brown	M	-	-	-	
TU1-3.1	B	33.3	36.6	8	9.3	Body	Triangular punctates	CF, G, MF	Reddish-Brown	C - M	-	-	-	
TU1-3.2	B	24.3	28.4	8.6	7.7	Rim	Triangular punctates	CC, R, MF (Quartz)	Dark-Reddish-Brown	M	-	In-turned, flat	-	
TU1-3.3	B	22.2	30.8	8.1	4.2	Body	Triangular punctates	G, MF	Grey-Brown	M	-	-	-	
TU1-3.4	B	26.8	31.9	8.9	8.2	Body	Triangular punctates	V, R, MF	Orangish-Brown	C - M	-	-	-	
TU1-3.5	B	38.2	48	11.9	29.7	Rim	Smoothed (both)	G, MF	Orangish-Brown	F	29	Out-turned, simple	Bowl	
TU1-3.6	B	42.5	48.7	10.3	24.2	Rim	Smoothed (both)	ILB, G, R, MF (Quartz)	Pinkish-Orangish-Brown	C - M	32	Out-turned, flat	Shallow Dish	
TU1-3.7	B	32.4	37.4	8.5	15.3	Rim	Burnished (Interior)	G, MF (Quartz)	Greyish-Brown	M - F	37	Out-turned, simple	Shallow Dish	
TU1-3.8	B	33.2	40.2	8.7	10.6	Body	Pierced	CF, R, MF	Orangish-Brown	C	-	-	-	
TU1-4.1	C	45.3	67.5	6.5	18.3	Body	Burnished (Exterior), smoothed (Interior)	CF, R, MF	Reddish-Brown	M	-	-	-	
TU1-4.2	A	17.3	23.3	7.1	4.4	Rim	-	G, R, MF	Greyish-Brown	M	-	In-turned, simple	-	
TU1-4.3	B	27.1	27.8	8.5	9.9	Rim	Smoothed (Interior)	R, V, MF (Quartz)	Orange-Brown	C - M	10	Out-turned, tapered-out	Jar	
TU1-4.4	B	29.2	34	7.1	8.2	Rim	Burnished (both)	CF, G, R, MF (Quartz)	Dark-Reddish-Brown	C - M	14	In-turned, simple	Closed Bowl	
TU1-4.5	A	14.1	14.4	6.9	1.6	Rim	Burnished (Interior)	CF, MF	Grey-Brown	M	-	Tapered-in	-	
TU1-4.6	A	20.5	21.3	8.1	3.3	Rim	Red slip (both)	CF, R, MF (Quartz)	Orangish-Brown	M	-	In-turned, lip-in	Bowl	
TU1-6.1	B	27.5	47.7	12.4	18.5	Rim	Triangular punctates, burnished (interior)	CF, G, MF (Quartz)	Grey-Dark Brown	C-M	-	In-turned, simple	-	
TU1-6.2	A	17.7	20.2	7.1	2.8	Rim	Triangular punctates, smoothed rim	G, R, MF	Pinkish-Orangish-Brown	C-M	-	Out-turned, flat	Cup	
TU1-6.3	C	37.2	53.6	7	16.6	Body	Red slip (both)	R, V, MF	Grey-Black	M	-	-	Carinated Bowl	
TU1-6.4	B	23.6	31.2	9.2	16.5	Foot	Burnished (Interior), red slip (Both)	CF, V, R, MF (Quartz)	Orangish-Brown	C	-	-	Footed Dish	
TU1-6.5	B	28.8	33.9	10.3	11.2	Body	Pierced, smoothed (interior)	MF	Pink-Orangish-Brown	M	-	-	-	
TU1-6.6	B	25.6	27.4	7.5	5.4	Body	Triangular Punctates, Parallel lines	R, MF (Quartz)	Pink-Orangish-Brown	C-M	-	-	-	
TU1-6.7	B	24.7	25.1	8.1	5.1	Rim	Red slip (Both)	G, R, MF	Greyish-Brown	C-M	5	In-turned, tapered-out	Jar	

Table 6: Diagnostic ceramic analysis: PP25.31 – TU1-6.7.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU1-6.8	B	34.1	35.9	13.4	19.8	Rim	Black burnish (Exterior), red slip (interior)	G, R, V, MF	Pink-Orange-Brown	M	-	Out-turned, lip-in	-	Angular
TU1-6.9	A	22.9	24	10.5	6.1	Rim	Black burnish (Exterior)	V, R, MF	Reddish-Dark Brown	C-M	-	-	-	
TU1-6.10	B	17.8	26.9	7.8	6.2	Rim	Smoothed (Both)	R, MF	Orange-Brown	M	-	Out-turned, simple	-	
TU1-6.11	B	30.1	34.1	7.3	8.7	Rim	Dark brown burnish (Exterior)	G, R, V, MF	Greyish-Brown	C-M	15	In-turned, lip-out	Closed Bowl	
TU1-6.12	B	25	39.1	9.4	10.9	Body	Parallel scrapes	G, R, V, MF (Quartz)	Orangish-Brown	C	-	-	-	
TU1-6.13	A	20.4	23.7	9.6	3.8	Rim	Fragment	ILB, G, MF (Quartz)	Light Brown	C	-	Out-turned, lip-in	-	
TU1-6.14	A	7.8	9.9	1.9	0.9	Rim	Smoothed (Both)	R, MF (Quartz)	Reddish-Brown	M	-	Out-turned, tapered	-	
TU1-6.15	A	7.6	22.8	3.5	3.8	Rim	-	G, R, MF (Quartz)	Dark Brown	C-M	-	Out-turned, simple	-	
TU1-6.16	A	19.6	23.5	8.7	3.9	Rim	Oxidized	G, MF	Pink-Orangish-Brown	C-M	-	Out-turned, flat	-	
TU1-6.17	A	23.4	23.6	5.8	4.1	Body	Burnished (Both)	R, MF	Greyish-Brown	C-M	-	-	-	
TU1-6.18	B	22.1	30.1	6.7	5.1	Rim	Red slip (Exterior)	R, MF (Quartz)	Reddish-Brown	M	-	In-turned, tapered-out	-	
TU1-6.19	A	15.1	20.5	6.3	2.9	Rim	Smoothed (Both)	G, R, MF	Reddish-Brown	C	-	In-turned, flat	-	
TU1-6.20	B	18.7	32.5	7.1	4.5	Rim	Red slip (Both)	CF, G, R, MF	Light-Brown	C-M	-	In-turned, lip-in	-	Angular
TU1-6.21	A	16.5	16.5	7	2.8	Rim	-	R, MF	Orangish-Brown	M	-	Out-turned, simple	-	
TU1-6.22	B	26.1	27.8	5.1	4.4	Rim	Red slip (Both)	R, MF	Orangish-Brown	M	-	Out-turned, simple	Shallow Dish	
TU1-6.23	B	18.9	33.8	7.4	3.9	Rim	Smoothed (Interior)	G, R, MF	Orange-Brown	C-M	-	In-turned, lip-in	-	
TU1-6.24	A	16.1	19.2	12.5	2.8	Rim	Oxidized	CF, G, R, MF	Pinkish-Orange-Brown	C-M	-	Out-turned, lip-in	-	
TU1-6.25	A	15.6	17.8	10	3.1	Rim	Smoothed (Interior)	G, R, MF	Orange-Brown	C-M	-	Out-turned, lip-in	-	
TU1-6.26	A	15.2	19.9	7.1	2.7	Rim	-	ELB, G, MF (Quartz)	Dark Reddish-Brown	C-M	-	In-turned, tapered-out	-	
TU1-7.1	B	26.3	46.2	9.9	14.4	Rim	Fishbone incision, red slip (both)	ILB, R, MF	Pinkish-Brown	C - M	25	Out-turned, flat	Jar	
TU1-7.2	C	36.7	51.2	7.9	18.4	Rim	Burnished, smoothed	MF, V	Greyish-Brown	M	30	Out-turned, flat	Bowl	
TU1-7.3	C	36	54.2	8.6	20.4	Rim	-	ILB, R, MF (Quartz)	Pinkish-Orange	C - M	14	In-turned, simple	Jar	
TU1-7.4	B	23.7	26.7	9.4	7.3	Rim	Burnished, smoothed	MF, R	Greyish-Black	M - F	31	Out-turned, lip-in	Bowl	
TU1-7.5	B	25.5	26.4	12.2	9.5	Rim	Smoothed	G, R, MF, CC	Greyish-Brown	C - M	23	Out-turned, lip-out	Bowl	
TU1-7.6	B	37.6	40	8.3	17.6	Rim	Red slip (both)	ILB, R, MF (Quartz)	Pinkish-Orange-Brown	C - M	14	In-turned, simple	Jar	
TU1-7.7	B	39.1	41.3	9.8	18.4	Rim	Smoothed	ILB, R, MF	Pinkish-Orange	C - M	14	Out-turned, flat	Bowl	
TU1-7.8	B	39.4	47.8	9	18.1	Body	Smoothed	MF (Quartz), R, V	Orangish-Brown	C - M	-	-	-	
TU1-7.9	-	-	-	-	-	Body	Smoothed	MF, R	Orangish-Brown	C - M	-	-	-	Has been added to Ceramic tab
TU1-7.10	B	25.4	39.4	8.3	10.9	Rim	Burnished (Exterior), smoothed	MF (Quartz), V	Greyish-Brown	M	14	In-turned, flat	Closed Bowl	
TU1-7.11	B	31.5	38.1	8.1	13.2	Body	Burnished (Exterior), red slip (Interior)	MF, V	Pinkish-Brown	C - M	-	-	Carinated Bowl	

Table 7: Diagnostic ceramic analysis: TU1-6.8 – TU1-7.11.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU1-7.12	-	-	-	-	-	Rim	Redslip (both)	ILB, R, V	Greyish-Orange	C - M	-	Simple	-	
TU1-7.13	A	11.9	21.4	7.2	1.9	Rim	-	ILB, R, MF	Greyish-Black	M	15	Simple	-	
TU1-7.14	B	30.2	36.7	7.2	7.7	Rim	Smoothed	ILB, R, MF	Orangish-Brown	C - M	-	Out-turned, simple	Carinated Bowl	
TU1-8.1	B	45.3	47.7	8.9	24.1	Rim	Burnished (Interior)	CF, R, MF	Greyish-Brown	M	24	Out-turned, flat	Bowl	
TU1-8.2	C	56.6	57	9.3	31.6	Rim	Burnished (Exterior)	CF, R, V, MF	Reddish-Brown	C - M	18	In-turned, simple	Closed Bowl	
TU1-8.3	C	45.7	69	11.1	36.6	Rim	Burnished (both)	R, V, MF (Quartz)	Pinkish-Orange-Brown	M	35	Out-turned, flat	Bowl	
TU1-8.4	C	41.2	68.4	7.9	28.8	Rim	Red slip (Exterior)	CF, R, V, MF	Greyish-Brown	C - M	29	Out-turned, tapered-out	Bowl	
TU1-8.5	A	19.5	23.5	6.7	3.4	Rim	Triangular punctates	R, MF	Dark-Reddish-Brown	C	-	In-turned, simple	-	
TU1-8.6	B	28	32.9	9.6	12.2	Rim	Burnished (Exterior), smoothed (Interior)	R, MF (Quartz)	Orange-Brown	C - M	17	In-turned, tapered-out	-	
TU1-8.7	A	17.3	23.4	7.3	3.4	Rim	Triangular punctates	R, MF (Quartz)	Pinkish-Orange-Brown	M	-	Tapered-out	-	
TU1-8.8	B	21.4	36.5	6.8	7.6	Rim	Red slip (both)	R, MF (Quartz)	Greyish-Brown	C - M	10	In-turned, tapered-out	Carinated Bowl	
TU1-8.9	B	26.4	28.5	8.5	7.8	Rim	Burnished (Exterior)	CF, R, V, MF	Reddish-Brown	C	9	Out-turned, flat	Jar	
TU1-8.10	B	24	26.4	9.2	6.1	Rim	Smoothed (both)	ILB, R, MF	Greyish-Brown	M	-	Out-turned, simple	-	
TU1-8.11	A	19.7	22.3	7.3	2.7	Rim	-	ILB, G, MF	Brown	C - M	-	Simple	Shallow Dish	
TU1-8.12	B	20.7	24.1	10.8	5.4	Rim	Smoothed (both)	ILB, R, V, CC, MF	Light Orangish-Brown	C	19	Out-turned, flat	-	
TU1-8.13	A	13.3	14.3	7	1.5	Rim	-	R, MF	Orangish-Brown	M	-	Simple	-	
TU1-8.14	A	18.1	23.4	8.8	4.3	Rim	Burnished (Both)	R, CC, MF	Reddish-Brown	C - M	14	In-turned, simple	-	
TU1-8.15	A	18.5	24.6	12.1	4.7	Rim	Burnished (Interior)	ILB, G, R, MF (Quartz)	Pinkish-Brown	C	-	Out-turned, simple	-	
TU1-8.16	B	34.2	45.8	7.2	10.6	Rim	Red slip (Interior)	ILB, G, V, R, MF (Quartz)	Light Yellowish-Brown	C - M	-	Simple	-	
TU1-8.17	B	33.7	41.2	22.3	21.2	Foot	-	ILB, G, R, MF (Quartz)	Reddish-Brown	C	10	Simple	Footed Dish	
TU1-8.18	A	22.2	25.3	10.1	6.8	Rim	Red slip (both)	R, MF	Light Orangish-Brown	C - M	-	Lip-in	Bowl	
TU2-1.1	B	33.1	40.2	10.2	15.5	Rim	Pierced, burnished	R, MF	Grey-Brown	M - F	22	In-turned, tapered-out	Closed Bowl	
TU2-1.2	B	28.2	28.7	8.7	7.7	Rim	Smoothed	MF	Dark Reddish-Brown	M	14	In-turned, simple	Closed Bowl	
TU2-1.3	B	23.1	29.9	8.9	7.4	Rim	-	MF (Quartz)	Pinkish-Light Orange	M	19	In-turned, simple	Closed Bowl	
TU2-1.4	A	17.2	19.6	9	4.6	Rim	Red slip (both), smoothed	MF	Greyish-Brown	M	13	In-turned, flat	Bowl	
TU2-1.5	A	18.8	24.3	11.4	5.8	Body	Smoothed	MF (Quartz)	Dark Reddish-Brown	M	-	-	Carinated Bowl	
TU2-1.6	A	13.5	14.4	6.9	1.4	Rim	-	MF	Reddish-Brown	C	12	In-turned, flat	Bowl	
TU2-1.7	A	13.4	17.4	9.7	2.2	Rim	Smoothed	MF	Yellowish-Brown	C - M	-	Out-turned, simple	Bowl	
TU2-1.8	A	14.5	18.4	9.9	2.4	Rim	Smoothed	MF	Pinkish-Light Brown	C - M	-	In-turned, tapered-out	Closed Bowl	
TU2-1.9	B	16.2	36.2	9.1	2.8	Rim	Oxidized	R, MF	Yellowish-Orange	C	19	Out-turned, lip-out	Shallow Dish	

Table 8: Diagnostic ceramic analysis: TU1-7.12 – TU2-1.9.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-1.10	A	9.3	12.8	7.6	0.8	Body	Triangular punctates	MF	Reddish-Brown	C - M	-	-	-	
TU2-1.11	A	14	14.5	5.6	1.7	Rim	-	MF (Quartz)	Grey-Brown	M	-	Out-turned, lip-out	Shallow Dish	
TU2-1.12	A	16.2	17.6	8.2	2.5	Rim	Smoothed	MF, V	Orangish-Brown	M	-	In-turned, simple	Bowl	
TU2-1.13	A	10.6	17	7.1	1.4	Rim	Incised, smoothed	MF	Orangish-Brown	C - M	-	Out-turned, lip-out	-	
TU2-1.14	A	16.9	21.4	9.3	3.4	Rim	Smoothed	MF (Quartz)	Reddish-Brown	C - M	-	In-turned, flat	-	
TU2-1.15	A	13.7	13.8	6.7	1.4	Rim	-	MF	Reddish-Brown	C	-	Out-turned, simple	-	
TU2-1.16	A	9.5	14.3	5.2	0.9	Rim	-	MF	Orangish-Brown	C	-	In-turned, tapered-out	-	
TU2-1.17	A	15.2	22.8	6.4	2.6	Body	Smoothed (Interior)	CF	Pinkish-Light Brown	C - M	-	-	-	
TU2-2.1	B	39.7	41.9	13.2	22.7	Rim	Triangular Punctates (Exterior), oxidized	G, R, MF (Quartz)	Orange-Brown	C-M	-	Out-turned, flat	Bowl	
TU2-2.2	B	28.6	33.7	10.2	12.9	Rim	Parallel incisions, triangular punctates, dark brown slip	MC, G, R, MF	Greyish-Reddish-Brown	M	21	Out-turned, flat	-	
TU2-2.3	B	42.3	38.5	22.8	50.4	Foot/Leg	Smoothed (All)	G, MF (Quartz)	Pinkish-Light Brown	C	-	-	Footed Dish	
TU2-2.4	B	26.5	29.6	6.5	6.4	Rim	Triangular punctates (Exterior)	ELB, V, R, MF	Orangish-Brown	C-M	-	In-turned, simple	-	
TU2-2.5	B	27.4	28.3	5.6	4.8	Rim	Triangular punctates (Exterior), brown burnish (Interior)	R, MF	Brown	C-M	13	In-turned, lip-out	Closed Bowl	
TU2-2.6	A	20	23.5	7.5	5	Rim	Triangular punctates, red slip (Interior)	R, MF	Greyish-Black	C	-	In-turned, flat	-	
TU2-2.7	A	18.1	24.2	10.8	7	Rim	Triangular punctates, black burnish (Interior)	V, R, MF	Greyish-Brown	C-M	-	Out-turned, flat	-	
TU2-2.8	A	10.6	13.3	7.2	0.9	Rim	Triangular punctates	MF (Quartz)	Greyish-Brown	C-M	-	Out-turned, flat	-	
TU2-2.9	A	15	22.1	7.1	2.5	Body	Triangular punctates, Oxidized	G, MF	Orangish-Light Brown	C	-	-	-	
TU2-2.10	B	25.3	27	6.4	4.2	Body	Triangular punctates (Exterior)	CF, R, MF	Brown	C-M	-	-	-	
TU2-2.11	A	13.5	17.7	5.4	1.5	Rim	Triangular punctates (Exterior)	G, R, MF	Orangish-Brown	C-M	-	In-turned, simple	-	
TU2-2.12	B	22.9	26.2	8.4	6.6	Body	Triangular punctates (Exterior)	CF, R, MF	Orangish-Brown	C	-	-	-	
TU2-2.13	A	10.7	13.3	5.7	1.1	Body	Triangular punctates (Exterior), dark brown burnish (Exterior)	R, MF	Dark Brown	C-M	-	-	-	
TU2-2.14	A	11.8	12.8	5.7	1.1	Rim	Triangular punctates (Exterior)	R, MF (Quartz)	Orangish-Brown	C-M	-	Out-turned, tapered-out	-	
TU2-2.15	A	19	22.2	8.4	3.2	Applique	-	MF	Orangish-Brown	M	-	-	-	Broken off of body
TU2-2.16	A	19.6	24.6	9.4	5.5	Body	Triangular punctates (Exterior), smoothed (Interior)	MF (Quartz)	Orangish-Brown	M	-	-	-	
TU2-2.17	B	34.4	36.3	14.6	20.1	Body	Smoothed (exterior)	MF (Quartz)	Orangish-Brown	C	-	-	-	
TU2-2.18	B	27.7	33.4	6.5	6.6	Body	Triangular punctates (Exterior), black slip (Interior)	G, V, MF	Reddish-Brown	C	-	-	-	
TU2-2.19	A	16.5	17.7	7.9	2.1	Rim	Linear incisions (Exterior)	G, MF	Pinkish-Orangish-Brown	C	-	Flat	-	Fragment
TU2-2.20	B	18.5	29.8	7.6	4	Rim	Square punctates (Exterior)	CF, V, MF	Orangish-Brown	C-M	20	In-turned, flat	Bowl	
TU2-2.21	A	14.5	16.4	5.9	1.5	Body	Triangular punctates (Exterior)	CF, R, MF	Dark Brown	C	-	-	-	
TU2-2.22	A	13.5	20.4	7	2.1	Body	Triangular punctates (Exterior)	R, MF	Pinkish-Orangish-Brown	C	-	-	-	

Table 9: Diagnostic ceramic analysis: TU2-1.10 – TU2-2.22.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-2.23	B	27.8	30.4	7.1	7.6	Body	Rounded	R, MF (Quartz)	Orangish-Grey-Brown	C-M	-	-	-	Reworked
TU2-2.24	B	39.3	42.5	25.5	36	Foot/Leg	Smoothed (exterior)	CF, MF (Quartz)	Reddish-Brown	C	-	-	Footed Dish	Fragment
TU2-2.25	B	32.3	43.9	25	23.3	Foot/Base	Grooved (Exterior)	CF, G, R, MF	Orangish-Brown	C	6	Tapered-out	Footed Dish	
TU2-2.26	A	17.2	24	6.5	3.1	Body	Triangular punctates (Exterior), dark brown burnish (Interior)	CF, G, R, MF	Dark Brown	C-M	-	-	-	
TU2-2.27	B	22.2	28.8	11.8	7.3	Body	Applique ridge (Exterior)	MF (Quartz)	Orangish-Brown	C-M	-	-	-	
TU2-2.28	A	19.3	20.3	7	3.6	Body	Punctates (Exterior)	G, MF (Quartz)	Orangish-Greyish-Brown	C-M	-	-	-	
TU2-2.29	A	14.2	17.3	12.4	3.1	Body	Parallel lines in relief	MF	Pinkish-Orange	C-M	-	-	-	
TU2-2.30	B	34.6	49.9	8.4	17.7	Body	Roulette (?), ground edge, smoothed (Interior)	G, MF (Quartz)	Greyish-Brown	C-M	-	-	-	Reworked
TU2-2.31	B	18.2	28.2	10.1	5.5	Rim	Irregular, black burnish (Interior)	R, MF	Grey-Black	M	-	Out-turned, lip-in	-	
TU2-2.32	B	24.7	27	8.1	5.3	Rim	Brown slip (Both)	R, MF	Orange-Brown	C-M	-	Out-turned, thickened, lip-out	-	
TU2-2.33	B	40.9	43.6	12.1	24.7	Rim	Black burnish (Interior)	G, MF	Grey-Brown	M	16	In-turned, lip-out	Closed Bowl	
TU2-2.34	B	38.3	43.8	12	18.3	Rim	Red slip (Both)	ELB, CF, MC, R, MF	Reddish-Brown	C-M	15	Out-turned, lip-in	Bowl	
TU2-2.35	B	34.5	37.7	12.4	17.2	Rim	Dark brown burnish (Interior)	G, R, MF (Quartz)	Greyish-Brown	M	15	In-turned, lip-out	Closed Bowl	
TU2-2.36	B	26.2	33.1	12.3	10.4	Rim	Irregular	CF, MF	Brown	C-M	-	Out-turned, lip-in	Bowl	
TU2-2.37	B	28.6	38.5	8	11.5	Rim	Smoothed (Interior)	G, R, MF	Pinkish-Orange	C-M	16	In-turned, simple	-	
TU2-2.38	B	30.1	34.1	7.1	11.7	Rim	Smoothed (Both)	CF, G, V, MF (Quartz)	Orangish-Brown	C-M	9	Out-turned, tapered-out	Jar	
TU2-2.39	B	32.4	38	9.2	13.5	Rim	Irregular, smoothed (Interior)	CF, G, R, MF	Brown	C	10	Out-turned, flat	Jar	
TU2-2.40	C	35.2	53.3	10.6	16.3	Rim	Irregular, oxidized	G, R, MF	Yellowish-Brown	C	13	In-turned, simple	-	
TU2-2.41	B	24.1	30.4	7.3	7.6	Rim	Black burnish (Both)	G, R, MF	Grey-Black	C-M	14	Out-turned, thickened, flat	-	
TU2-2.42	B	32.5	36.7	8.2	8	Rim	Irregular, black burnish (Exterior)	ELB, R, MF (Quartz)	Pinkish-Brown	C-M	18	Out-turned, flat	-	
TU2-2.43	B	25.9	45.3	9.8	13.4	Rim	Irregular, brown slip (Exterior)	G, MF	Greyish-Brown	M	17	In-turned, simple	Closed Bowl	
TU2-2.44	B	25.6	33.8	7	8.2	Rim	Dark brown burnish (Interior)	R, MF	Greyish-Brown	C-M	-	Out-turned, flat	-	
TU2-2.45	B	29.1	31.8	8.7	9	Rim	Smoothed (Both)	CF, G, R, MF	Reddish-Brown	C	14	In-turned, simple	-	
TU2-2.46	B	22.1	40.2	21.4	19.7	Leg/Foot	Smoothed (All)	CF, MF	Reddish-Brown	C	-	-	Footed Dish	Fragment
TU2-2.47	B	25.9	32.5	9.9	9.7	Rim	Irregular, oxidized	CF, V, R, MF	Orangish-Pinkish-Brown	C	14	Out-turned, simple	-	
TU2-2.48	B	32.4	33	11	13.4	Rim	Irregular, grooved (Interior), red slip (Exterior)	CF, R, MF (Quartz)	Brown	C	-	Out-turned, simple	Shallow Dish	
TU2-2.49	B	28	32.2	9.5	12.8	Rim	Irregular, smoothed (Both)	G, R, MF (Quartz)	Reddish-Brown	C-M	-	In-turned, lip-out	-	
TU2-2.50	B	25.9	31.4	9.8	11	Rim	Smoothed (Both)	G, R, MF (Quartz)	Orangish-Brown	C-M	20	Out-turned, tapered-out	-	
TU2-2.51	B	25.5	25.7	7.7	5.8	Rim	Red burnish (Interior), red slip (Both)	CF, G, R, MF	Greyish-Brown	C	14	In-turned, tapered-out	Closed Bowl	
TU2-2.52	A	10.1	15.1	8.3	1.5	Body	Parallel grooves (Exterior)	G, MF	Orangish-Brown	C	-	-	-	

Table 10: Diagnostic ceramic analysis: TU2-2.23 – TU2-2.52.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-2.53	B	17.3	37.5	6.8	5.5	Rim	Brown slip (Exterior), smoothed (Both)	CF, MF	Dark Brown	C-M	12	In-turned, tapered-out	-	
TU2-2.54	B	20.4	24.5	11	7.4	Rim	-	G, R, MF (Quartz)	Dark Brown	C-M	-	In-turned, tapered-out	-	
TU2-2.55	B	25.2	29.6	5.8	5.1	Rim	Smoothed (exterior)	CF, R, MF	Reddish-Brown	C	14	Out-turned, simple	Closed Bowl	
TU2-2.56	B	22.3	33.2	8	6.8	Rim	-	G, R, MF	Orange-Brown	C-M	14	Out-turned, lip-out	-	
TU2-2.57	B	25.5	26.7	9.6	8.3	Rim	-	CF, R, MF	Dark Brown	C	10	In-turned, tapered-out	Closed Bowl	
TU2-2.58	B	21.2	32.1	11	8.8	Rim	-	G, MF (Quartz)	Orangish-Brown	C	-	Out-turned, lip-in	-	
TU2-2.59	A	22.8	22.9	8.3	4.1	Rim	Smoothed (exterior)	CF, G, MF	Orangish-Brown	C	-	Tapered	-	
TU2-2.60	B	22.3	29.9	10.5	7.6	Rim	Smoothed (Both)	CF, G, V, R, MF	Reddish-Brown	C	-	In-turned, tapered-out	-	
TU2-2.61	B	25	29.4	8.4	5.3	Rim	Irregular	CF, MF	Pinkish-Orange-Brown	C	-	Simple	-	
TU2-2.62	B	19	27.3	7.9	5	Rim	Smoothed (Interior)	G, R, MF	Pinkish-Brown	C	-	Out-turned, tapered-out	-	
TU2-2.63	B	15.8	27.9	8.2	4.6	Rim	-	V, R, MF (Quartz)	Orangish-Dark Brown	C-M	-	Out-turned, tapered-out	-	
TU2-2.64	A	20.3	22.6	11.2	5.7	Rim	-	SH, R, MF	Grey-Brown	C-M	-	Out-turned, lip-in	Bowl	
TU2-2.65	A	17.3	23.4	7.2	4.1	Rim	-	MF	Orangish-Brown	C	13	Out-turned, tapered-out	-	
TU2-2.66	B	17.1	27.5	14.4	8	Rim	-	G, R, MF (Quartz)	Pinkish-Brown	C	-	Out-turned, lip-out	-	Fragment
TU2-2.67	B	22.5	27.7	8	4.8	Rim	Irregular	G, R, MF (Quartz)	Orangish-Dark Brown	C	-	Out-turned, simple	-	
TU2-2.68	A	22.9	23	11.8	7.2	Rim	Smoothed (Both)	V, R, MF	Orangish-Brown	C	-	Out-turned, simple	-	
TU2-2.69	B	20.2	26.9	13.9	8.2	Rim	Soot (Interior)	ILB, V, R, MF (Quartz)	Pinkish-Brown	C	-	Out-turned, simple	-	
TU2-2.70	A	20.3	22.5	13	5.1	Rim	Brown burnish (Both)	G, MF	Pinkish-Orange-Brown	C-M	-	Out-turned, tapered-out	-	
TU2-2.71	B	17,4	26,9	8.7	4	Rim	Brown burnish (Interior)	R, MF	Orange-Brown	C	-	Out-turned, tapered-out	-	
TU2-2.72	A	19	24.7	7.9	3.2	Rim	Black slip (Exterior), smoothed (Interior)	G, MF (Quartz)	Brown	C	11	In-turned, tapered-out	Closed Bowl	
TU2-2.73	A	18	22.5	8.4	4	Rim	Dark brown slip (Interior)	CF, MF	Orangish-Brown	C	-	In-turned, simple	-	
TU2-2.74	A	17.3	22.3	8.4	3.2	Rim	Smoothed (exterior)	G, R, MF	Light Brown	C-M	8	In-turned, lip-in	Closed Bowl	
TU2-2.75	A	15	17.4	9.6	2.9	Rim	Dark brown slip (Interior), smoothed (Both)	MF	Orangish-Brown	M	-	In-turned, flat	-	
TU2-2.76	B	20.9	26.9	12.8	5.5	Rim	-	G, R, MF	Dark Brown	C	-	Simple	-	Fragment
TU2-2.77	A	14.9	23	6.9	2.4	Rim	Burnished (Interior)	R, MF	Greyish-Brown	C-M	-	Out-turned, flat	-	
TU2-2.78	A	20	20	8	3.4	Rim	Dark brown slip (Both)	R, MF	Orange-Brown	C-M	-	Out-turned, thickened, lip-out	-	
TU2-2.79	B	13.1	28.9	8.7	3.7	Rim	Dark brown burnish (Both)	G, MF (Quartz)	Orangish-Brown	C	-	Simple	-	Fragment
TU2-2.80	A	16.7	19	5.8	2.1	Rim	Irregular, oxidized	ELB, G, R, MF	Pinkish-Brown	C	-	Simple	-	
TU2-2.81	A	15.8	18	11.5	3.6	Rim	Smoothed (Interior)	Cf, G, V, R, MF (Quartz)	Orangish-Brown	C	-	In-turned, simple	-	
TU2-2.82	A	15.1	21.6	7.9	2.8	Rim	Dark brown burnish (Exterior)	CF, R, MF	Dark Reddish-Brown	C-M	-	In-turned, tapered-out	Bowl	

Table 11: Diagnostic ceramic analysis: TU2-2.53 – TU2-2.82.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-2.83	A	14.3	20.5	5.9	2	Rim	-	G, MF	Light Brown	C-M	-	Tapered	-	Fragment
TU2-2.84	A	15.8	17.1	9.7	2.7	Rim	Smoothed (Both)	MF	Greyish-Brown	M	-	Out-turned, tapered-out	-	
TU2-2.85	A	14.3	20.9	7.3	2.5	Rim	Black slip (Both)	CF, G, MF	Dark Reddish-Brown	C-M	-	In-turned, simple	-	
TU2-2.86	A	14	17.8	7.8	2.2	Rim	Brown slip (Both)	G, R, MF	Pinkish-Brown	C-M	-	Out-turned, simple	-	
TU2-2.87	A	13.7	16.6	7	1.5	Rim	Smoothed (Interior)	MF (Quartz)	Pinkish-Orange-Brown	C	-	Out-turned, flat	-	
TU2-2.88	A	12.9	14.7	6.3	1.1	Rim	Irregular, smoothed (Interior)	MF (Quartz)	Orange-Brown	C-M	-	Out-turned, simple	-	
TU2-2.89	A	9.8	22.9	8.1	1.7	Rim	Brown slip (Both)	R, MF	Grey-Brown	C	-	Out-turned, lip-out	-	
TU2-2.90	A	10.8	16.9	6.2	1.3	Rim	Brown slip (Both)	R, MF (Quartz)	Orangish-Brown	C-M	-	Out-turned, tapered-out	-	
TU2-2.91	A	13.4	18.9	7.2	1.9	Rim	Smoothed (exterior)	ILB, CF, R, MF	Light Brown	C-M	-	In-turned, tapered-out	-	
TU2-2.92	A	12.5	15.1	8.9	2.1	Rim	-	G, MF (Quartz)	Pinkish-Orange-Brown	C	-	Out-turned, tapered-out	-	
TU2-2.93	A	12.8	18.5	8.3	1.9	Rim	-	R, MF (Quartz)	Dark Orangish-Brown	C	-	In-turned, tapered-out	-	Fragment
TU2-2.94	A	11.8	16.4	6.9	1.2	Rim	Dark brown burnish (Interior)	G, V, R, MF	Brown	C-M	-	In-turned, tapered	-	
TU2-2.95	A	12.1	18.4	6.6	1.4	Rim	-	MC, G, R, MF (Quartz)	Greyish-Brown	C	-	Out-turned, simple	-	
TU2-2.96	A	6.8	13.8	6.4	0.6	Rim	-	V, MF	Orangish-Brown	C	-	Simple	-	Fragment
TU2-2.97	A	7.8	15.3	7.4	1	Rim	Black burnish (Both)	V, R, MF	Dark Reddish-Brown	C-M	-	Simple	-	Fragment
TU2-3.1	B	21.2	40.9	10.2	12.5	Rim	Parallel wavy incisions, brown burnished (Interior)	CF, G, R, MF	Dark Reddish-Brown	M	19	Out-turned, flat	Jar	Material from 19-May-2019
TU2-3.2	A	20.2	23.1	5.2	2.8	Rim	Rectangular pumctates (Exterior)	MF	Greyish-Brown	M	-	In-turned, simple	-	Material from 19-May-2019
TU2-3.3	A	17.2	24.1	7.9	3.9	Rim	Triangular punctates, Oxidized	G, R, MF	Pinkish-Orange	C	-	Out-turmed	-	Material from 19-May-2019
TU2-3.4	B	21.1	28.7	7.7	4.3	Body	Triangular punctates, smoothed (Interior)	CF, R, MF	Reddish-Brown	C-M	-	-	-	Material from 19-May-2019
TU2-3.5	B	25.7	42.2	10.3	14.6	Rim	Triangular punctates, Red slip (Both), Brown Burnish (Both)	V, R, MF (Quartz)	Pinkish-Orange-Brown	M	20	In-turned, flat	-	Material from 19-May-2019
TU2-3.6	B	23.1	46.9	10.5	14.8	Rim	Triangular punctates, Red slip (Both), Brown Burnish (Both)	CF, V, R, MF (Quartz)	Orange-Brown	C-M	29	In-turned, flat	-	Material from 19-May-2019
TU2-3.7	A	13.2	14.7	7.6	1.2	Rim	Red slip (Interior)	R, MF	Pinkish-Orange-Brown	M	-	In-turned, flat	-	Material from 19-May-2019
TU2-3.8	A	14	15.2	8	1.8	Rim	Smoothed (Both)	G, V, MF	Orange-Brown	C-M	-	Out-turned, tapered-out	-	Material from 19-May-2019
TU2-3.9	A	13.7	15.4	8.2	2	Rim	Smoothed (Interior)	G, R, MF	Reddish-Orange-Brown	C-M	-	Out-turned, lip-in	-	Material from 19-May-2019
TU2-3.10	A	14	17.1	7.4	1.6	Rim	Irregular	R, MF	Orangish-Light Brown	C	-	Flat	-	Material from 19-May-2019
TU2-3.11	A	12.4	14.3	7.3	1.8	Rim	Black burnish (Interior)	CC, R, MF (Quartz)	Grey-Black	C-M	-	Out-turned, flat	-	Material from 19-May-2019
TU2-3.12	A	12.3	15	7.1	1.3	Rim	Irregular, Dark brown burnish (Interior)	ILB, CF, R, MF	Orangish-Brown	C-M	-	Out-turned, simple	-	Material from 19-May-2019
TU2-3.13	A	12.9	16.8	7.1	2	Rim	-	G, R, MF	Reddish-Orange-Brown	C	-	In-turned, simple	-	Material from 19-May-2019
TU2-3.14	A	13.4	16.3	8.6	2.5	Rim	-	R, MF	Pinkish-Orangish-Brown	C	-	Simple	-	Material from 19-May-2019
TU2-3.15	A	16.2	21.8	6.5	3.4	Rim	Dark brown burnish (Both)	G, R, MF	Orangish-Light Brown	C-M	-	In-turned, flat	-	Material from 19-May-2019

Table 12: Diagnostic ceramic analysis: TU2-2.83 – TU2-3.15.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-3.16	A	15.3	23.1	8.4	3.8	Rim	Red slip (Exterior)	CF, G, MF (Quartz)	Dark Brown	C-M	-	Out-turned, tapered-out	-	Material from 19-May-2019
TU2-3.17	A	20	21.7	7.7	3.9	Rim	Red slip (Interior)	SH, V, G, R, MF	Pinkish-Orange	C-M	-	In-turned, tapered-in	Bowl	Material from 19-May-2019
TU2-3.18	B	17.7	28.6	8.8	5.9	Rim	Smoothed (Both)	SH, CF, G, R, MF	Light Brown	C-M	-	In-turned, simple	-	Material from 19-May-2019
TU2-3.19	A	22.1	24.7	7.4	4.6	Rim	Red slip (Interior)	CF, R, MF	Orange-Brown	C	-	Out-turned, tapered-out	-	Material from 19-May-2019
TU2-3.20	A	15.2	19.8	6.1	1.9	Rim	Red burnish (both)	CC, V, G, MF	Reddish-Dark Brown	C	11	In-turned, tapered	Closed bowl	Material from 19-May-2019
TU2-3.21	A	20.1	22	8.4	4.8	Rim	Dark brown burnish (Interior)	ILB, V, R, MF	Greyish-Brown	C	-	In-turned, simple	-	Material from 19-May-2019
TU2-3.22	A	15	23.8	5.9	2.3	Rim	Irregular	G, R	Pinkish-Orangish-Brown	C-M	-	Out-turned, flat	-	Material from 19-May-2019
TU2-3.23	A	15.6	19.7	7.6	3.3	Rim	-	MF (Quartz)	Dark Brown	C	-	In-turned, simple	-	Material from 19-May-2019
TU2-3.24	B	14	27.5	7.9	2.7	Rim	Black burnish (Interior)	CF, MF	Orangish-Light Brown	C	-	Out-turned, tapered	-	Material from 19-May-2019
TU2-3.25	B	18.7	25.1	7.3	3.8	Rim	-	CF MF	Reddish-Orange	C	-	Out-turned, simple	-	Material from 19-May-2019
TU2-3.26	B	25.1	25.3	7.2	5	Rim	Triangular punctates	R, MF	Orangish-Light Brown	C-M	-	Out-turned, flat	-	Material from 19-May-2019
TU2-3.27	B	25.8	26	12.5	10.6	Rim	Black slip (Interior)	ILB, G, MF (Quartz)	Pinkish-Orange	C	-	Out-turned, tapered	-	Material from 19-May-2019
TU2-3.28	B	22.3	29.9	12.3	6.8	Rim	Irregular	G, R, MF	Orangish-Brown	C	-	-	-	Material from 19-May-2019
TU2-3.29	B	26	30	8.3	8.6	Rim	Red slip (Exterior), smoothed (Interior)	CF, G, R, MF	Reddish-Brown	C	-	Out-turned, tapered-out	-	Material from 19-May-2019
TU2-3.30	B	21.8	26.6	7.8	6.6	Rim	Smoothed (Interior)	R, MF	Orangish-Brown	C-M	-	Out-turned, simple	-	Material from 19-May-2019
TU2-3.31	B	17.5	31.4	9	6.3	Rim	Brown burnish (Interior), Smoothed (Exterior)	G, R	Grey-Black	C-M	-	In turned, lip-in	-	Material from 19-May-2019
TU2-3.32	B	14.1	27.4	13.6	5.2	Rim	-	V, R, MF (Quartz)	Grey-Brown	C	-	In-turned, lip-out	-	Material from 19-May-2019
TU2-3.33	B	21.9	28	8.9	6.8	Rim	Red slip (Interior)	CC, CF, G, MF	Orangish-Brown	C-M	-	In-turned, lip-in	-	Material from 19-May-2019
TU2-3.34	B	21.8	37	10.4	8.5	Rim	Dark brown burnish (Exterior)	G, R, MF	Dark Brown	C-M	10	In-turned, tapered-out	Closed bowl	Material from 19-May-2019
TU2-3.35	B	25.2	45.4	9.7	13	Rim	Red slip (Both)	CF, V, R	Pinkish-Orangish-Brown	C-M	19	In-turned, flat	-	Material from 19-May-2019
TU2-3.36	B	40.3	44.6	13.3	28.9	Foot	Light brown burnish (Exterior), Red slip (Interior)	G, V, R, MF	Reddish-Orangish-Brown	C-M	-	-	Footed dish	Material from 19-May-2019
TU2-3.37	A	16.1	24.3	8.9	4.9	Rim	Fragment	G, R, MF	Pinkish-Orange	C	-	Out-turned, lip-out	-	Material from 19-May-2019
TU2-3.38	B	38.8	40.7	7.6	14.1	Rim	Brown burnish (Interior), brown slip	ILB, R, MF	Orangish-Brown	C	13	Out-turned, flat	Jar	Material from 19-May-2019
TU2-3.39	B	42.6	44.2	11.8	20	Rim	Red slip (Both)	CF, R, MF (Quartz)	Reddish-Orange-Brown	M	-	In-turned, lip-in	Plate	Angular, Material from 19-May-2019
TU2-3.40	C	52.6	68.8	7.1	32.7	Rim	Brown burnish (Interior), Red slip (Exterior)	CC, V, R, MF	Brown	C-M	18	Out-turned, simple	Bowl	Material from 19-May-2019
TU2-3.41	A	15	20.5	7.2	2.9	Body	Triangular punctates (Both), line incisions, dark brown burnish (Both)	SH, G, MF	Grey-Black	C-M	-	-	-	Material from 18-May-2019
TU2-3.42	A	18.9	19.5	5.1	2.5	Rim	Triangular punctates (Exterior), smoothed (Interior)	G, MF	Reddish-Brown	M	-	In-turned, tapered-out	-	Material from 18-May-2019
TU2-3.43	A	15.2	20.1	6.5	2.6	Body	Triangular Punctates (Exterior), oxidized	R, MF	Pinkish-Orangish-Brown	M	-	-	-	Material from 18-May-2019
TU2-3.44	A	22.7	26.6	7.2	4.6	Rim	Triangular incisions, black slip	R, MF	Grey-Black	M	-	Out-turned, simple	-	Material from 18-May-2019
TU2-3.45	A	13.8	14.1	7.5	1.6	Rim	Triangular punctates, black burnish (Exterior)	G, R, MF	Reddish-Dark Brown	C	-	In-turned, simple	-	Material from 18-May-2019

Table 13: Diagnostic ceramic analysis: TU2-3.16 – TU2-3.45.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-3.46	A	21.3	22.6	14.7	5.9	Rim	Triangular punctates (Rim)	CF, G, V, R, MF	Reddish-Brown	C	-	Flat	Jar	Material from 18-May-2019
TU2-3.47	B	18.7	33	6.1	4.9	Rim	Black Burnish (Exterior)	ELB, CF, G, R	Grey-Black	M	-	In-turned, simple	-	Material from 18-May-2019
TU2-3.48	A	16.1	23.1	7.8	4	Body	Red burnish (Both)	G, R, MF	Grey-Black	C-M	-	-	-	Material from 18-May-2019
TU2-3.49	A	19.9	21.1	6.5	3.4	Body	Punctates	ILB, G, R, MF	Grey-Black	C-M	-	-	-	Roulette?, Material from 18-May-2019
TU2-3.50	A	11.7	18.4	6.8	1.5	Body	Triangular punctates (Exterior)	G, R, MF	Orangish-Brown	C-M	-	-	-	Material from 18-May-2019
TU2-3.51	B	20.5	34.3	13.1	9.8	Rim	Irregular, red slip (Both)	CF, G, R, MF	Pinkish-Brown	C-M	-	In-turned, flat	-	Angular, Material from 18-May-2019
TU2-3.52	A	10.7	15.4	6.2	1.2	Body	Rectangular pumctates, oxidized	R, MF (Quartz)	Pinkish-Light Brown	C	-	-	-	Material from 18-May-2019
TU2-3.53	A	13.4	18.8	6.5	1.8	Rim	Punctates (Exterior)	SH, G, R, MF	Orangish-Brown	C-M	-	Flat	-	Material from 18-May-2019
TU2-3.54	A	17.7	19.4	7.7	2.9	Rim	Triangular punctates (Exterior), black burnish (Exterior), smoothed (Interior)	G, MF	Dark Brown	M	-	Flat	-	Material from 18-May-2019
TU2-3.55	B	16.3	27.4	6.4	3.7	Body	Parallel incised lines, Dark brown slip	ILB, G, R, MF (Quartz)	Orangish-Brown	C-M	-	-	-	Material from 18-May-2019
TU2-3.56	A	15.5	17.2	6.6	1.9	Body	Brown slip (Interior), brown burnish (Interior), oxidized	G, R, MF	Pinkish-Orange-Brown	M	-	-	-	Material from 18-May-2019
TU2-3.57	A	14.7	19.4	7.9	2.5	Rim	Black burnish (Interior), red slip (Exterior)	ILB, CF, G, MF	Reddish-Brown	C-M	-	Tapered-out	-	Material from 18-May-2019
TU2-3.58	A	16.4	16.5	5.4	2.4	Rim	Rectangular punctates	SH, R, MF	Greyish-Brown	C-M	-	In-turned, flat	-	Material from 18-May-2019
TU2-3.59	A	21.2	23.1	6.9	5.4	Rim	Black burnish (Exterior)	R, MF	Grey-Black	M	-	In-turned, flat	-	Material from 18-May-2019
TU2-3.60	B	19.5	28.4	7.5	4.7	Body	Punctates (Exterior), smoothed (Interior)	CC, R, MF	Orangish-Light Brown	C-M	-	-	-	Material from 18-May-2019
TU2-3.61	B	20.5	40.7	7.4	8.5	Body	Triangular punctates (Exterior), red slip (Both), smoothed (Interior)	CF, R, MF (Quartz)	Pinkish-Orange-Brown	C-M	-	-	-	Material from 18-May-2019
TU2-3.62	A	12.9	15.9	7.4	2	Rim	Triangular punctates (Exterior/Rim), Brown burnish (Interior)	G, MF	Greyish-Black	M	-	Flat	-	Material from 18-May-2019
TU2-3.63	B	29.9	31.8	8.7	8	Rim	Comb marks (Interior/Rim), red slip (Interior)	CF, R, MF	Greyish-Brown	C-M	-	Tapered-out	-	Material from 18-May-2019
TU2-3.64	B	23.6	35	5.9	5.9	Rim	Punctates (Exterior), brown slip	SH, F, MF	Reddish-Dark Brown	M	-	Out-turned, simple	Bowl	Material from 18-May-2019
TU2-3.65	B	18.3	28.7	6.3	4.5	Rim	Punctates (Exterior), red slip (Interior)	R, MF	Greyish-Brown	M	-	In-turned, simple	Shallow dish	Material from 18-May-2019
TU2-3.66	A	19.6	21.2	7.1	3.4	Body	Punctates (Exterior), red slip (Both), smoothed (Interior)	R, MF	Brown	C-M	-	-	-	Material from 18-May-2019
TU2-3.67	A	17.3	18.6	5.9	2.1	Rim	Triangular punctates (Exterior)	CF, MF	Greyish-Brown	C-M	-	In-turned, simple	-	Material from 18-May-2019
TU2-3.68	A	17.1	20.8	7.7	3.3	Body	Triangular punctates (Exterior), black slip (Both)	ELB, V, MF	Reddish-Orange	C	-	-	-	Material from 18-May-2019
TU2-3.69	A	21.2	28.8	10.5	10.2	Body	Punctates (Exterior), red slip (Interior)	G, R, MF	Reddish-Brown	C	-	-	-	Material from 18-May-2019
TU2-3.70	A	14.2	14.7	7.2	1.8	Rim	Arc impressed (Exterior)	MF	Greyish-Light Brown	C	-	Out-turned, flat	-	Material from 18-May-2019

Table 14: Diagnostic ceramic analysis: TU2-3.46 – TU2-3.70.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-3.71	A	18.3	20.3	6.9	3.2	Body	Triangular punctates (Exterior), black slip (Interior)	ILB, G, MF	Reddish-Brown	C	-	-	-	Material from 18-May-2019
TU2-3.72	A	21.1	24.2	6	4.2	Body	Triangular punctates (Exterior)	ILB, MF	Greyish-Black	C-M	-	-	-	Material from 18-May-2019
TU2-3.73	B	29	40.3	11.2	12.8	Rim	Triangular punctates (Exterior), brown slip (Both), oxidized	G, R, MF (Quartz)	Pinkish-Orange	C	35	Flat	Wide bowl	Material from 18-May-2019
TU2-3.74	A	14	15.8	7.3	2.3	Rim	Triangular punctates (Interior), brown slip (Both), oxidized	G, V, MF	Orangish-Brown	C-M	-	Flat	-	Material from 18-May-2019
TU2-3.75	A	14.8	19.1	7.9	2.5	Rim	Triangular punctates (Exterior), black burnish (Interior)	R, MF	Light Brown	C-M	-	In-turned, simple	-	Material from 18-May-2019
TU2-3.76	A	12.3	18.8	5.8	2.4	Rim	Triangular punctates (Exterior), red slip (Both)	G, R, MF	Orangish-Brown	C-M	-	In-turned, simple	Closed bowl	Material from 18-May-2019
TU2-3.77	A	17.1	21.7	8.2	3.4	Body	Punctates (Exterior)	G, V, MF	Reddish-Dark Brown	C	-	-	-	Material from 18-May-2019
TU2-3.78	A	12.2	22.4	7.8	3	Body	Parallel incisions (Exterior), brown slip	CF, R, MF	Reddish-Brown	C-M	-	-	-	Material from 18-May-2019
TU2-3.79	A	10.6	13	4.6	1	Body	Triangular punctates (Exterior)	R, MF	Brown	C-M	-	-	-	Material from 18-May-2019
TU2-3.80	A	16.7	21.3	8.4	3.7	Rim	Triangular punctates (Exterior/Rim), black burnish (Interior)	R, MF	Greyish-Black	C-M	-	Flat	-	Material from 18-May-2019
TU2-3.81	A	18.6	20.1	8.2	3.6	Body	Triangular punctates (Exterior)	R, MF	Grey-Black	C	-	-	-	Material from 18-May-2019
TU2-3.82	A	16.4	23.8	8.3	3.1	Body	Parallel lines, red slip (Interior), oxidized	SH, CF,R, MF	Pinkish-Light Orange	C	-	-	-	Material from 18-May-2019
TU2-3.83	A	9.2	10.3	5.2	0.6	Rim	Triangular punctates (All), brown burnish	MF	Greyish-Brown	M-F	-	Flat	Cup	Material from 18-May-2019
TU2-3.84	B	37.2	45.7	12.3	27	Rim	Red slip (Both)	ILB, CF, V, R	Pinkish-Brown	C	23	Out-turned, tapered-out	Jar	Material from 18-May-2019
TU2-3.85	C	44.2	56.4	7	25.6	Rim	Brown slip (Interior), smoothed (Exterior)	CF, R, MF	Orangish-Brown	C-M	19	In-turned, tapered-out	Closed bowl	Material from 18-May-2019
TU2-3.86	C	41.3	60.9	6.8	21.6	Rim	Smoothed (Interior)	G, R, MF	Greyish-Brown	C-M	26	In-turned, tapered-out	Closed bowl	Material from 18-May-2019
TU2-3.87	C	33.2	51.3	12.2	26.2	Rim	Red burnish (Both), red slip	R, MF	Orange-Brown	C-M	-	Out-turned, lip-in	Shallow dish	Angular, Material from 18-May-2019
TU2-3.88	B	31.7	35.1	10.9	14.4	Body	Red burnish (Both)	CF, G, MF (Quartz)	Purplish-Red-Brown	M-F	-	-	-	Unique, Material from 18-May-2019
TU2-3.89	B	25.7	32.6	11.8	13.1	Body	Black burnish (Exterior)	ILB, CF, G, R, MF	Grey-Brown	C	-	-	Carinated bowl	Material from 18-May-2019
TU2-3.90	B	27.3	37.2	9	11.1	Body	Red slip (Exterior)	CF, G, R, MF	Grey-Brown	C-M	-	-	-	Ground edge, Material from 18-May-2019
TU2-3.91	B	30.2	39.1	9.1	11.6	Rim	Dark brown burnish (Exterior)	CF, R, MF	Grey-Black	M	-	Out-turned, simple	Jar	Material from 18-May-2019
TU2-3.92	B	23.4	29.3	8	7.9	Body	Black burnish (Exterior)	ELB, G, R, MF	Orangish-Brown	C-M	-	-	Carinated bowl	Material from 18-May-2019
TU2-3.93	B	21.2	32.6	10.7	10.9	Rim	Smoothed (Interior), oxidized	CF, V, R, MF	Grey-Brown	C	-	Out-turned, flat	-	Material from 18-May-2019
TU2-3.94	B	27.2	28.8	8.4	7.2	Rim	Red slip (Interior)	G, MF	Greyish-Black	C	-	Out-turned, simple	Bowl	Material from 18-May-2019
TU2-3.95	A	21	21.4	5.9	3.2	Rim	Red burnish (Exterior), smoothed (Interior)	ELB, G, MF (Quartz)	Brown	C	-	Out-turned, simple	-	Material from 18-May-2019
TU2-3.96	B	30.1	31.2	9.1	7.5	Rim	Brown slip (Both), oxidized	G, V, R	Pinkish-Light Orange	C-M	-	Out-turned, tapered	Cup	Material from 18-May-2019
TU2-3.97	C	32.4	51	15.3	18.8	Base	Dark brown burnish (Exterior)	ELB, CF, R, MF	Orangish-Brown	C	-	-	Beaker (?)	Material from 18-May-2019
TU2-3.98	C	41	56.8	17.4	265	Body	Smoothed (Interior)	CF, R, MF	Dark Brown	C	-	-	Jar	Lug handle, Material from 18-May-2019

Table 15: Diagnostic ceramic analysis: TU2-3.71 – TU2-3.98.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-3.99	B	24.4	41.7	17.8	14.3	Base	Oxidized	CF, R, MF (Quartz)	Greyish-Brown	C-M	-	-	-	Ground edge (?), Material from 18-May-2019
TU2-3.100	B	25	35.1	10.2	10.3	Rim/Foot	Smoothed (Interior), soot (Exterior)	V, MF	Reddish-Brown	C	-	Out-turned, tapered-out	Fluted jar, footed dish	Material from 18-May-2019
TU2-3.101	B	20.9	36	8.4	8.1	Rim	Smoothed (Both)	CF, R, MF	Reddish-Brown	C-M	27	In-turned, flat	-	Material from 18-May-2019
TU2-3.102	B	24.9	28.3	6.5	6.4	Rim	Dark brown burnish (Exterior)	ILB, G, MF	Dark Brown	M	17	In-turned, tapered-out	Closed bowl	Material from 18-May-2019
TU2-3.103	B	25.2	28.6	6.9	5	Rim	Smoothed (Both)	G, MF (Quartz)	Greyish-Brown	C	-	Out-turned, tapered	-	Material from 18-May-2019
TU2-3.104	B	21.4	28.2	6.5	5.2	Rim	Irregular, smoothed (Interior)	V, G, MF	Light Brown	C	-	Out-turned, simple	-	Material from 18-May-2019
TU2-3.105	B	20.6	32.6	11.3	9.6	Rim	Dark brown burnish (Interior)	CF, R, MF	Grey-Brown	M	-	Out-turned, lip-out	-	Material from 18-May-2019
TU2-3.106	A	15.4	22.5	5.6	2.5	Rim	Brown slip (Both)	R, MF	Orangish-Brown	C-M	-	Out-turned, simple	-	Material from 18-May-2019
TU2-3.107	B	19.9	27.3	6.2	4.3	Rim	Red slip (Interior)	G, R, MF	Reddish-Dark Brown	C	14	In-turned, tapered	Carinated closed bowl	Material from 18-May-2019
TU2-3.108	B	21.8	26.5	9.8	5.5	Rim	Smoothed (Both)	CF, R, MF	Orangish-Brown	C-M	-	In-turned, simple	-	Material from 18-May-2019
TU2-3.109	A	18.5	24	7.6	4.5	Rim	Irregular, Dark brown burnish (Interior)	CC, CF, MF	Orangish-Brown	C-M	-	Out-turned, simple	-	Material from 18-May-2019
TU2-3.110	B	20.3	25.9	8.9	6.7	Rim	Red slip (Interior), oxidized	CF, G, R, MF (Quartz)	Pinkish-Orangish-Brown	C	-	Out-turned, flat	Wide bowl	Material from 18-May-2019
TU2-3.111	B	17.4	27.4	6.9	4	Rim	Incised (Exterior), brown burnish (Interior)	G, V, MF	Dark Brown	C-M	16	Out-turned, simple	-	Material from 18-May-2019
TU2-3.112	B	19.8	26.3	6.5	3.9	Rim	Irregular, brown burnish (Interior)	G, R, MF	Dark Brown	C-M	-	Out-turned, tapered-out	-	Material from 18-May-2019
TU2-3.113	B	18.8	26.2	9.2	5.9	Rim	Red burnish (Interior), red slip (Both)	CF, G, R, MF (Quartz)	Orange-Brown	C-M	-	Out-turned, lip-out	-	Material from 18-May-2019
TU2-3.114	B	18.7	26.8	10.5	4	Rim	Oxidized, soot (Interior)	CC, SH, V, R	Yellowish-Brown	C	-	In-turned, flat	-	Material from 18-May-2019
TU2-3.115	B	19.3	25.6	7.4	5	Rim	Dark brown burnish (Interior), red slip (Both)	CF, G, R, MF	Reddish-Orangish-Brown	C-M	-	Out-turned, tapered	Shallow dish	Material from 18-May-2019
TU2-3.116	B	19.3	25	9.6	5.5	Rim	Black slip (Interior)	CF, G, R, MF	Greyish-Brown	C	-	Lip-in	-	Fragment, Material from 18-May-2019
TU2-3.117	B	19.6	27.5	8.2	5.6	Rim	Incised line (Exterior), soot (Exterior), smoothed (Interior)	R, MF (Quartz)	Grey-Brown	M	-	In-turned, tapered-out	-	Material from 18-May-2019
TU2-3.118	A	21.2	22.9	11.8	5.1	Rim	Brown burnish (Both)	R, MF	Grey-Black	M	-	Out-turned, flat	Bowl	Material from 18-May-2019
TU2-3.119	A	19.5	22.5	9.7	3.7	Rim	-	V, R, MF	Pinkish-Brown	C-M	-	Out-turned, lip-out	-	Material from 18-May-2019
TU2-3.120	A	17.6	18.3	8.7	3.2	Rim	Brown burnish (Exeterior), red slip (Interior)	R, MF	Reddish-Orangish-Brown	C-M	-	Out-turned, lip-in	-	Material from 18-May-2019
TU2-3.121	B	20.1	26.6	11.5	8	Rim	-	CF, G, R, MF	Pinkish-Brown	C-M	-	Thickened (Both)	-	Material from 18-May-2019
TU2-3.122	A	19.9	23.5	6.9	3.9	Rim	Soot (Exterior)	G, R, MF	Grey-Reddish-Black	C-M	-	Out-turned, simple	-	Material from 18-May-2019
TU2-3.123	A	17.3	23.9	8.7	4.5	Rim	Tool groove (Both), brown burnish (Both)	G, R, MF	Greyish-Brown	C-M	-	Out-turned, lip-in	-	Material from 18-May-2019
TU2-3.124	A	18.8	21.1	6.9	2.5	Rim	Irregular	R, MF (Quartz)	Orangish-Brown	C	-	Thickened, lip-in	-	Material from 18-May-2019
TU2-3.125	A	15.7	20	4	1.6	Rim	Black burnish (Exterior), red slip (Both)	R, MF	Grey-black	M	-	In-turned, simple	Cup	Material from 18-May-2019
TU2-3.126	A	16.3	16.7	5.9	1.9	Rim	Dark brown burnish (Exterior), smoothed (Interior)	R, MF	Brown	C-M	-	In-turned, simple	-	Material from 18-May-2019
TU2-3.127	B	17.7	27.7	8.4	4.7	Rim	Red slip (Exterior), oxidized	SH, V, R, MF	Pinkish-Orangish-Brown	C	-	Out-turned, tapered-out	-	Material from 18-May-2019
TU2-3.128	B	17.7	21.7	10.5	4.3	Rim	-	G, R, MF	Orangish-Brown	C	-	Out-turned, simple	-	Material from 18-May-2019

Table 16: Diagnostic ceramic analysis: TU2-3.99 – TU2-3.128.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-3.129	B	17.7	25.6	8.3	4.2	Rim	Smoothed (Rim)	G, R, MF	Pinkish-Orange	C	-	In-turned, lip-out	-	Material from 18-May-2019
TU2-3.130	A	17.9	19.6	8	4.3	Rim	Brown slip (Both), smoothed (Interior)	G, R, MF	Orange-Brown	C	-	Simple	-	Material from 18-May-2019
TU2-3.131	A	14.6	18.9	10.3	2	Ring base	Brown slip (Both), oxidized	R, MF (Quartz)	Pinkish-Yellowish-Brown	C	-	Simple	Footed dish	Material from 18-May-2019
TU2-3.132	A	16.4	22.8	5.8	3	Rim	Smoothed (Interior)	ILB, G, MF (Quartz)	Brown	C	-	Out-turned, flat	-	Material from 18-May-2019
TU2-3.133	A	18.4	20.2	8.3	3.7	Rim	Black slip (Both)	CF, R, MF	Black	C	-	Flat	-	Material from 18-May-2019
TU2-3.134	A	16.2	18.3	6.1	2.3	Rim	Black burnish (Interior)	G, R, MF	Grey-Brown	C	-	Out-turned, tapered-out	-	Material from 18-May-2019
TU2-3.135	A	18.3	20.9	8.4	3.6	Rim	Oxidized	ILB, CF, MF	Grey	C	-	In-turned, flat	-	Material from 18-May-2019
TU2-3.136	A	17.3	17.4	6.5	2.1	Rim	Impressions (Exterior), smoothed (Interior)	G, R, MF	Greyish-Brown	C-M	-	In-turned, tapered	-	Material from 18-May-2019
TU2-3.137	A	13.3	17.7	7.1	1.9	Rim	Brown slip (Both)	CF, V, R, MF	Grey-Brown	C	-	In-turned, tapered-out	Closed bowl	Material from 18-May-2019
TU2-3.138	A	14.3	23.6	7.3	2.9	Rim	Black burnish (Both)	G, MF	Grey-Black	C	-	In-turned, simple	-	Material from 18-May-2019
TU2-3.139	A	11.3	15.6	5.4	1.2	Rim	Black burnish (Interior)	CF, R, MF	Pinkish-Orange-Brown	C	-	Out-turned, thickened, lip-out	-	Material from 18-May-2019
TU2-3.140	A	18.6	21	6.8	2.4	Rim	Red slip, smoothed (Exterior)	R, MF (Quartz)	Brown	C-M	-	In-turned, tapered-out	Closed bowl	Material from 18-May-2019
TU2-3.141	A	14.7	21	4.9	2.1	Rim	Irregular	R, MF	Pinkish-Orange	C	-	Out-turned, lip-out	-	Material from 18-May-2019
TU2-3.142	A	13.9	19.1	7.4	2.3	Rim	Brown burnish (Both)	CF, G, V, R, MF	Orangish-Brown	C	-	In-turned, lip-out	-	Material from 18-May-2019
TU2-3.143	A	15.5	16.6	5	1.5	Rim	-	G, R, MF	Greyish-Brown	C-M	-	Out-turned, tapered-out	-	Material from 18-May-2019
TU2-3.144	A	15.4	18.3	6.8	2.8	Body	Triangular incisions (Exterior), black burnish (Interior)	CF, R, MF	Greyish-Black	C-M	-	-	-	TIW (?), Material from 18-May-2019
TU2-3.145	B	17.9	25.2	9.1	9.9	Body	Black slip (Exterior), smoothed (Interior)	R, MF	Grey-Black	C-M	-	-	Carinated bowl	Material from 18-May-2019
TU2-3.146	A	16.8	16.9	7.1	2.2	Body	Applique band	R, MF	Dark Reddish-Brown	C-M	-	-	-	Material from 18-May-2019
TU2-3.147	A	12.5	13.8	7	1.7	Rim	Dark brown burnish (Interior)	ILB, V, MF	Grey-Browm	C-M	-	Out-turned, lip-out	-	Material from 18-May-2019
TU2-3.148	A	15.8	15.9	8.4	1.9	Rim	Irregular, oxidized	R, MF	Yellowish-Brown	C	-	Lip-out	-	Material from 18-May-2019
TU2-3.149	A	11.8	24	8.6	2.7	Rim	Irregular, finger prints (Exterior) (?)	CF, G, V, MF	Dark Reddish-Brown	C	-	Out-turned, thickened, lip-out	-	Material from 18-May-2019
TU2-3.150	A	13,4	13.5	7.6	1.6	Rim	Brown slip	R, MF	Pinkish-Orange	M	-	In-turned, tapered	-	Material from 18-May-2019
TU2-3.151	A	14	17.8	7.1	1.8	Rim	Smoothed (Interior), oxidized	MF	Yellowish-Light Brown	C	-	Out-turned, flat	-	Material from 18-May-2019
TU2-3.152	A	12.2	16.8	6.3	1.3	Rim	-	V, R, MF	Reddish-Brown	C	-	Out-turned, simple	Cup	Material from 18-May-2019
TU2-3.153	A	12.4	17.9	6.5	1.5	Rim	-	R, MF	Orangish-Brown	M	-	Out-turned, flat	-	Material from 18-May-2019
TU2-3.154	A	13.4	14.1	7.4	1.4	Rim	Striated (Rim), black burnish (Exterior)	ELB, MF	Brown	C	-	In-turned, tapered-out	Closed bowl	Material from 18-May-2019
TU2-3.155	A	13.6	15,7	5	1.6	Rim	-	G, R, MF	Pinkish-Orange	C	-	Out-turned, flat	-	Material from 18-May-2019
TU2-3.156	B	17.6	28.5	7.8	4.6	Rim	Irregular	CF, R, MF	Pinkish-Orangish-Brown	C	-	Simple	-	Material from 18-May-2019
TU2-3.157	B	23	29.8	9	6.8	Body	Smoothed (Exterior)	ELB, R, MF	Pinkish-Orange-Brown	M	-	-	Carinated dish	Material from 18-May-2019

Table 17: Diagnostic ceramic analysis: TU2-3.129 – TU2-3.157.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-3.158	A	16.8	18	8.6	2.2	Body	Finger impressed (?)	MF	Pinkish-Orange	C	-	-	-	Material from 18-May-2019
TU2-3.159	A	22.1	24.8	7.2	3.8	Body	Impressed (Exterior), blackened (Exterior)	G, R, MF	Orange-Brown	C-M	-	-	Tuyères	Material from 18-May-2019
TU2-4.1	E	103.1	124.2	9.7	149.5	Rim	Irregular, red slip (Both)	ELB, V, R, MF	Pinkish-Orange-Brown	M	34	Out-turned, tapered-out	Carinated wide bowl	
TU2-4.2	C	44.1	65.4	7.8	27.4	Rim	Red burnish (Interior), red slip (Both)	ELB, V, R, MF	Dark Reddish-Brown	C-M	25	Out-turned, tapered-out	Carinated bowl	
TU2-4.3	C	48.4	57.5	9	36.7	Rim	Red slip (Interior)	CF, R, MF (Quartz)	Greyish-Brown	C-M	29	Out-turned, flat	Wide bowl	
TU2-4.4	C	38.5	63.4	11.2	35.5	Rim	Red slip (Both)	ELB, CF, R, MF	Greyish-Brown	C-M	24	Out-turned, flat	Wide bowl	
TU2-4.5	C	42.8	51.2	8.7	22.7	Rim	Brown slip (Interior)	V, R, MF	Brown	C	14	Out-turned, tapered-out	-	
TU2-4.6	B	36.8	48.6	14.5	20.6	Rim	Oxidized	SH, G, R, MF (Quartz)	Pinkish-Orange-Brown	C-M	-	Out-turned, lip-in	Wide bowl	
TU2-4.7	B	34.4	49	8.2	14.7	Rim	Red burnish (Both)	ILB, CF, R, MF	Grey-Brown	C-M	20	Out-turned, tapered	-	
TU2-4.8	B	41.4	43.4	9.7	20.1	Rim	Smoothed (Interior)	CF, G, R, MF	Light Grey-Brown	C	-	Out-turned, flat	Bowl	Angular
TU2-4.9	C	40.1	51.9	6.9	11.9	Body	Brown burnish (Exterior), grooved (Interior)	CF, R, MF	Orange-Brown	M	-	-	-	
TU2-4.10	B	39.3	40.9	11.6	20.1	Rim	Red slip (Both)	ELB, V, R, MF	Greyish-Brown	C-M	-	Out-turned, lip-in	Wide bowl	
TU2-4.11	B	43.3	47.4	12.1	19.7	Rim	Black slip (Exterior)	V, R, MF	Orangish-Brown	C-M	-	Out-turned, lip-in	Wide bowl	
TU2-4.12	B	30.2	31.6	9.9	9.3	Rim	Punctates (Rim), grooved (Interior)	MF	Light Brown	M	-	Out-turned, tapered	-	
TU2-4.13	A	14.2	23.9	5.9	2.2	Body	Triangular punctates	MF	Grey-Black	M	-	-	-	
TU2-4.14	B	27.5	28.3	9.4	9.8	Lid rim	Parallel incisions, grooved edge, brown slip	CF, MF	Orangish-Brown	C-M	-	Tapered	Lid	
TU2-4.15	B	34.1	41.8	8.8	11.1	Rim	Black burnish (Both)	CF, G, R, MF	Grey-Brown	C	21	In-turned, tapered	Closed bowl	
TU2-4.16	B	25.3	31.5	14.6	11.7	Rim	Oxidized	SH, G, R, MF	Pinkish-Orange	C-M	-	In-turned, lip-in	-	
TU2-4.17	B	29.7	39.4	11	17.2	Rim	Smoothed (Both)	ELB, G, R, MF	Reddish-Grey-Brown	M	-	Out-turned, flat	-	
TU2-4.18	B	31.5	44.2	11.9	14.7	Rim	Black burnish (Interior)	CF, MF	Grey-Brown	M	15	In-turned, lip-out	Closed bowl	
TU2-4.19	B	35.4	43	11.1	20.2	Rim	Black burnish (Both)	G, R, MF	Grey-Brown	M	16	In-turned, lip-out	Closed bowl	
TU2-4.20	B	33.4	36.2	11.6	15.6	Rim	Black burnish (Interior)	R, MF	Grey-Brown	M	-	In-turned, lip-out	Closed bowl	
TU2-4.21	B	20.2	35.1	9.2	8.2	Rim	Dark brown burnish (Both)	R, MF	Grey-Black	M	-	Out-turned, lip-in	-	
TU2-4.22	B	19.8	28.5	10.1	5.6	Rim	Oxidized	SH, CF, V, R, MF	Pinkish-Orange	C-M	-	Out-turned, flat	Shallow dish	
TU2-4.23	B	26.6	40.2	12.5	10.6	Rim	Irregular, black burnish (Exterior)	V, R, MF	Reddish-Brown	C	20	Out-turned, flat	Bowl	
TU2-4.24	B	26.7	27.6	9.3	7.9	Rim	Irregular	R, MF (Quartz)	Light Brown	C-M	-	Lip-out	-	Degraded
TU2-4.25	B	12.8	33	11.7	5.2	Rim	Black burnish (Interior)	R, MF	Grey-Brown	M	-	In-turned, lip-out	Closed bowl	
TU2-4.26	B	19.5	37.9	6.5	7.4	Body	Dark brown burnish (Exterior)	CF, MF	Orangish-Brown	M	-	-	Carinated bowl	
TU2-4.27	B	25.4	30	9.2	7.2	Rim	Grooved (All)	CF, R, MF (Quartz)	Orangish-Light Brown	C	-	Out-turned, tapered-out	Cup	
TU2-4.28	A	21.7	24.9	7.8	3.8	Rim	Smoothed (Both)	R, MF	Brown	C	-	Out-turned, tapered	-	

Table 18: Diagnostic ceramic analysis: TU2-3.158 – TU2-4.28.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-4.29	B	23.8	29.3	6.8	5.3	Rim	Black slip (Both)	V, R, MF (Quartz)	Grey-Black	C-M	-	In-turned, tapered-out	-	
TU2-4.30	B	17	26.7	8.4	4	Rim	Smoothed (Exterior)	ELB, MF	Orange-Brown	C-M	-	In-turned, tapered-out	-	
TU2-4.31	B	17.3	30	9	6	Rim	Red burnish (Interior)	G, V, R, MF	Dark Reddish-Brown	C-M	-	In-turned, simple	-	
TU2-4.32	A	19.7	21.1	10.7	5.1	Rim	Dark brown slip (Exterior), Smoothed (Interior)	CF, G, R, MF	Reddish-Brown	C	-	In-turned, simple	-	
TU2-4.33	B	17.4	27.8	7.5	3.3	Body	Triangular incisions (Exterior), red slip (Interior)	G, V, R, MF	Orangish-Reddish-Brown	C-M	-	-	-	
TU2-4.34	B	18.9	27.9	11.3	7.3	Rim	Smoothed (Both)	CF, R, MF	Dark Reddish-Brown	C-M	13	Out-turned, flat	Jar	
TU2-4.35	B	23.8	26.1	7.4	6	Rim	Brown burnish (Both)	G, V, R, MF	Orange-Brown	C	-	Out-turned, flat	-	
TU2-4.36	A	17.2	20.7	8.8	2.9	Rim	Brown burnish (Both)	G, R, MF	Reddish-Orange	C-M	-	Out-turned, tapered-out	-	
TU2-4.37	A	15.4	18.8	6.1	1.9	Body	Triangular punctates (Exterior)	V, R, MF	Reddish-Brown	C	-	-	-	
TU2-4.38	A	17.8	19.2	8	2.7	Rim	-	G, R, MF	Orange-Brown	C	-	Lip-out	-	Fragment
TU2-4.39	A	19.4	21.4	9	4.9	Rim	-	R, MF	Orangish-Brown	C	-	In-turned, flat	-	
TU2-4.40	B	16.9	25.3	6.9	3.5	Rim	-	G, R, MF	Brown	C-M	-	Out-turned, simple	-	
TU2-4.41	A	18.9	21.2	7.1	3.2	Rim	Irregular	CF, R, MF	Orange-Brown	C-M	-	Out-Turned, tapered-out	-	
TU2-4.42	A	16.6	16.8	5.9	1.8	Rim	Dark brown slip (Exterior), grooved (Interior)	ELB, R, MF	Dark Brown	C	-	In-turned, simple	-	
TU2-4.43	A	16.2	21	8.6	2.3	Rim	-	G, R, MF	Grey-Brown	C	-	Out-turned, lip-in	-	
TU2-4.44	A	16.8	23.6	6.5	3.4	Rim	-	G, R, MF	Greyish-Brown	C	-	In-turned, tapered-out	-	
TU2-4.45	A	19	19.7	7.7	2.9	Rim	Brown burnish (Interior), red slip (Both)	CF, G, R, MF	Greyish-Brown	C	-	Out-turned, tapered	Shallow dish	
TU2-4.46	A	15	23	7.9	3.1	Rim	-	G, R, MF	Orangish-Brown	C	-	In-turned, flat	-	
TU2-4.47	A	18.5	22.4	7.6	4	Body	Fishbone impressed (Exterior), smoothed (Interior)	G, V, R	Grey-Brown	C	-	-	-	
TU2-4.48	A	15.9	18	6.4	2.3	Rim	Irregular	CF, R, MF	Reddish-Orange	C-M	-	Out-turmed, lip-out	-	
TU2-4.49	A	7.5	18.8	8.4	1.7	Rim	Brown burnish (Both)	G, R, MF	Pinkish-Brown	C-M	-	In-turned, flat	-	
TU2-4.50	A	13.3	18.8	8	2.4	Rim	Oxidized	CF, G, R, MF (Quartz)	Pinkish-Orange	C-M	-	In-turned, tapered-out	-	
TU2-4.51	A	12.8	15.9	6.4	1.8	Rim	-	G, R, MF	Pinkish-Orangish-Brown	M	-	In-turned, simple	-	
TU2-4.52	A	11.3	20.9	6.4	1.3	Rim	-	CF, R, MF	Greyish-Light Brown	C	-	Tapered	-	Fragment
TU2-4.53	A	11.5	12.7	6.9	1.2	Rim	Smoothed (Interior)	CF, G, R, MF (Quartz)	Grey-Browm	C	-	Out-turned, flat	-	
TU2-4.54	A	13.6	21.5	7.7	1.8	Rim	-	G, R, MF (Quartz)	Pinkish-Brown	C	-	Out-turned, simple	-	Fragment
TU2-4.55	B	21.2	30.7	17.3	7.4	Base/Foot	Black burnish (Interior), brown burnish (Exterior)	G, MF (Quartz)	Greyish-Brown	C	-	-	Footed dish	Fragment
TU2-5.1	A	20.7	24.2	7.8	5.5	Body	Wavy incisions	ELB, R, MF	Orangish-Light Brown	C - M	-	-	-	
TU2-5.2	A	19.4	22.8	6.6	3.7	Body	Triangular punctates	R	Light Brown	M	-	-	-	
TU2-5.3	A	14.4	14.9	7.3	2.1	Rim	Burnished (both)	CF, MF	Dark Brown	C - M	-	Out-turned, simple	-	Dark brown burnish

Table 19: Diagnostic ceramic analysis: TU2-4.29 – TU2-5.3.

Sample	Scale	Width (mm)	Length (mm)	Thickness (mm)	Weight (g)	Portion	Surface Description	Fabric	Fabric Color	Quality	Rim Diameter (cm)	Rim Form	Vessel	Comments
TU2-5.4	A	15.2	18.2	8.7	2.2	Rim	-	G, R, MF	Pinkish-Orange	C	-	Out-turned, simple	-	
TU2-5.5	A	14.9	14.9	8.2	2.2	Rim	Roulette impression	R, MF	Pinkish-Orange	C - M	-	Out-turned, lip-out	-	
TU2-5.6	B	33	34.5	6.6	9.7	Rim	Burnished (Exterior)	R, MF	Orangish-Light Brown	M	15	In-turned, simple	Closed Bowl	Dark brown burnish
TU2-5.7	B	20.4	26.7	6.2	4.3	Rim	Red slip (Interior)	R, MF (Quartz)	Pinkish-Brown	C	19	Out-turned, simple	-	
TU2-5.8	B	16	33.3	9.2	5	Rim	Smoothed (Interior)	ELB, R, MF	Pinkish-Orange-Brown	C - M	-	Out-turned, simple	-	
TU2-5.9	B	19.9	31	7.5	5.2	Rim	Red slip (Exterior)	R, MF	Orangish-Brown	M	11	In-turned, tapered-out	-	
TU2-5.10	B	40.4	42.6	8.1	16.9	Rim	Burnished (Interior)	CF, G, R, MF (Quartz)	Pinkish-Orangish-Brown	C - M	20	In-turned, simple	Closed Bowl	Dark brown burnish
TU2-5.11	B	29.1	37.2	8.2	10.2	Rim	Burnished (Interior)	R, V, MF	Reddish-Greyish-Brown	F	23	Out-turned, tapered-out	Shallow dish	Black burnish
TU2-5.12	B	36.9	38.7	10.8	17.2	Rim	Red slip (both)	G, R, MF	Greyish-Black	M	34	Out-turned, tapered-out	Bowl	Angular rim
TU2-5.13	B	25.6	35.4	12	8	Foot	Soot (both)	R, MF (Quartz)	Greyish-Brown	C - M	7	Out-turned, tapered-out	Footed Dish	
TU2-6.1	A	15.6	16.1	6.2	2.3	Rim	Triangular punctates	G, V, MF	Pinkish-Orange-Brown	M	-	Out-turned, simple	-	
TU2-6.2	A	13.9	17.6	10.3	0.8	Rim	Smoothed (both)	MF (Quartz)	Orangish-Brown	M	-	Out-turned, simple	-	
TU2-6.3	A	20.3	26.6	11.9	2.8	Rim	-	G, R, MF	Orange-Brown	M	-	In-turned, simple	-	
TU2-6.4	B	24.2	34.7	8.7	7.6	Rim	Smoothed (Interior)	SH, CF, R, MF	Orange-Brown	C - M	9	Out-turned, lip-out	-	
576					4849.2									

Table 20: Diagnostic ceramic analysis: TU2-5.4 – TU2-6.

Appendix V: Non-Diagnostic Ceramic Analysis Supplementary Data

UNIT/CONTEXT	Size a Count	Size b Count	Size c Count	Size d Count	Size e Count	Weight (g)	DBS (cm)
PP1	10	14	-	-	-	133.1	44-88
PP2	8	13	1	-	-	139.1	25-101
PP3	6	6	-	-	-	48	10-80
PP4	30	3	-	1	-	144.9	15-118
PP5	65	38	-	-	-	417.5	11-105
PP6	34	11	-	-	-	139.4	40-102
PP7	63	16	2	-	-	314.3	10-101
PP8	42	11	-	1	-	229.9	20-99
PP9	25	7	-	-	-	79.3	15-114
PP10	51	34	9	-	1	829.3	19-99
PP11	83	48	1	-	-	517.1	25-100
PP12	20	22	-	-	-	193.5	15-105
PP13	29	24	1	-	-	296.1	10-99
PP14	22	10	-	-	-	128.3	25-101
PP15	5	5	1	-	-	72.3	20-98
PP16	5	3	-	-	-	27.9	12-36
PP17	22	3	-	-	-	66.9	43-98
PP18	7	3	-	-	-	26.4	44-79
PP19	9	2	-	-	-	22.6	14-69
PP20	11	9	-	-	-	95.7	30-105
PP21	13	5	-	-	-	72	12-121
PP22	16	5	3	-	-	146.2	20-109
PP23	58	26	-	-	-	263	5-108
PP24	114	40	-	-	-	488.7	7-105
PP25	351	99	5	1	-	1494.9	7-112
TU1-2	11	10	-	-	-	120.9	7-20
TU1-3	21	30	-	-	-	294.2	20-40
TU1-4	21	6	-	-	-	105.9	30-40
TU1-4	11	6	1	-	-	104.8	40-48
TU1-5	3	-	-	-	-	3.6	40-47
TU1-6	132	51	-	-	-	634.2	48-75
TU1-7	67	43	5	-	-	616.7	75-100
TU1-8	64	37	7	1	-	667	100-133
TU2-1	378	50	-	-	-	822.4	5-21
TU2-2	934	275	4	-	-	3461	15-35
TU2-3	2654	574	4	-	-	8850.2	35-65
TU2-3	538	154	1	-	-	2384.2	65-92
TU2-4	450	186	6	2	-	2416.4	65-105
TU2-5	74	48	3	-	-	649.3	105-190
TU2-6	54	20	1	-	-	280.7	105-194
Total:	6511	1947	55	6	1	27797.9	

Table 1: Non-diagnostic ceramic analysis: all units.

Appendix VI: Imported Ceramic Analysis Supplementary Data

UNIT/CONTEXT	Designation	Size Scale	Length	Width	Thickness	Vessel Portions	Ceramic Type	Chronology	Origin	Count	Weight (g)	DBS (cm)	Comments
PP8	**PP8.I.1**	A	19.3	17.2	5.1	Body	Yuan Longquan	13-14th	SW China	1	2.4	99	Pinkish-grey, sugary fabric
PP10	**PP10.I.1**	B	29.8	21.9	3	Body	Yemeni Hatch Decorated	12-14th	S. Red Sea	1	2	19-99	Very thin, no glaze
PP11	**PP11.I.1**	A	7.1	6.5	-	Handle	Monochrome Green-Glazed	9-10th	S Iran	1	0.5	39	Opaque Turq.
PP13	**PP13.I.1**	A	13	8.1	4.5	Undif.	Monochrome Green-Glazed	10-11th	S Iran	1	0.5	45	Similar to Opaque Turq.
TU1-2	**TU1-2.I.1**	A	17.1	11	7.6	Rim	Yuan Longquan	13-14th	SW China	1	3	16	From same vessel at TU1-2.I.2
TU1-2	**TU1-2.I.2**	A	16.2	13	2.2	Body	Yuan Longquan	13-14th	SW China	1	0.2	16	From same vessel at TU1-2.I.1
TU1-7	**TU1-7.I.1**	B	46.4	27.7	11.2	Body	Omani Blue Speckled Ware bowl	13-16th	S. Red Sea	1	15.2	75-100	Evidence of reuse (grinding)
TU2-1	**TU2-1.I.1**	B	27	25.4	4.8	Body	Song Longquan	13th	SW China	1	5	21	Moulded bowl
TU2-2	**TU2-2.I.1**	A	9.7	4.5	5.3	Rim	Song/Yuan Longquan	13-14th	SW China	1	0.1	20-28	Combines with TU2-2.I.2, Pale green, sugary fabric, Two pieces at 28cmbs
TU2-2	**TU2-2.I.2**	B	29.4	19.8	5.5	Rim	Song/Yuan Longquan	13-14th	SW China	1	3.7	20-28	Combines with TU2-2.I.1, Pale green, sugary fabric, Two pieces at 28cmbs
TU2-2	**TU2-2.I.3**	A	13.8	13.6	4.7	Body	Guangdong Stoneware	13-14th	SW China	1	1	20-28	Grey, sugary fabric, craquelure glaze
TU2-2	**TU2-2.I.4**	B	28.5	18.1	6.1	Rim	Monochrome Green-Glazed	10-11th	S Iran	1	3	20-28	Pale yellow fabric, glazed interior
TU2-3	**TU2-3.I.2**	B	45.8	26.2	7.5	Rim	Yuan Longquan	13th	SW China	1	9.6	47-50	Deep dish, Greenish-Grey, sugary fabric
TU2-3	**TU2-3.I.3**	B	29.7	24	9.2	Rim	Yuan Longquan	13th	SW China	1	6.8	47-50	Deep dish, Greenish-Grey, sugary fabric
TU2-3	**TU2-3.I.1**	A	12.1	9.5	4.7	Rim	Guangdong Celadon	14th	SW China	1	0.4	65	Grey, sugary fabric
TU2-4	**TU2-4.I.1**	B	32.7	23.3	3.5	Body	White Ware	9-12th	S China	1	4	93	Creamy, sugary fabric, craquelure glaze
TU2-4	**TU2-4.I.2**	A	16.6	9.6	10	Body	Monochrome Green-Glazed	11-13th	S Iran	1	0.5	93	Pale yellow fabric
TU2-5	**TU2-5.I.1**	B	32.1	26.5	9.4	Body	Yuan Longquan; Martaban	13-14th	SW China; Myanmar	1	12	110	Greenish-Grey, sugary fabric; decorated interior
TU2-5	**TU2-5.I.2**	D	92.3	72.5	6.4	Body	Martaban	13-14th	Myanmar	1	58.3	110	Reduction, light brown fabric; glazed exterior
Total:										19	128.2		

Table 1: Imported ceramic analysis: all units.

Appendix VII: Spindle Whorl Analysis Supplementary Data

UNIT/CONTEXT	Size Scale	Count	Visible Int	Visible Ext	Decorations	Weight (g)	Max Thickness	Fabric Description	Colors
PP9	1B	1	1	1	No	15.8	29.6	Low fired, smoothed exterior, large inclusions, red slip (?)	Reddish-Brown
PP10	1B	1	1	1	No	7.5	21.7	Low fired, large inclusions	Reddish-Brown
PP25	2A, 3B	5	4	5	No	45	47.8	Low fired, reduction, large to medium inclusions,	Dark-Reddish-Brown; Pinkish-Orangish-Brown
TU1-8	1A	1	1	1	No	4.7	9.4	Medium Fired, Medium to fine inclusions, light burning	Pinkish-Orange to reddish-Brown
TU2-1	6A	6	6	4	No	17.2	19.5	Medium Fired, Medium to fine inclusions	Pinkish-Orange to reddish-Brown
TU2-2	2A, 3B	5	5	5	Circular punctates, linear incisions, punctates possibly contained quartz pebbles	32.5	29.6	Medium to low fired, medium to fine inclusions	Dark-Reddish-Brown to Pinkish-Orangish-Brown
TU2-3 (18 May)	2B	2	2	2	No	51.3	49.4	Low fired, reduction, medium to fine inclusions, grog, oxidation	Pinkish-Orange to Yellowish-light Brown
TU2-4	1B	1	1	1	No	12.1	33.8	Low fired, reduction, medium to fine inclusions, grog, oxidation	Pinkish-Orange
TU2-6	1A	1	1	1	Itricately incised circles and radiating lines, beveled bottom	1.7	5.6	Fine, MF	Grey-Brown
		23				187.8			

Table 1: Spindle whorls analysis: all units.

Appendix VIII: Chlorite Schist Analysis Supplementary Data

Sample	Size Scale	Length	Width	Thickness	Vessel Portions	Decorations	Reworked	Count	Weight (g)	DBS (cm)	Comments
PP6.C.1	A	21.6	12	9.3	Body	No	Yes	1	2.2	39-102	Possibly pierced
PP7.C.1	A	21.2	18.8	5.7	Body	No	No	1	4.1	10-101	Thin body fragment
PP10.C.1	A	14.8	14.1	8.3	Body	No	No	1	2.6	19-99	Angular shaped piece
PP12.C.1	C	65.6	34.2	14.4	Rim	Yes	No	1	36.7	15-105	Flat rimmed bowl; Burnished interior; Parallel lines in relief on exterior, Vohemar-Style
PP14.C.1	A	22.9	22.5	7.2	Body	Yes	No	1	5.9	25-101	Decorated with a single line in relief, Vohemar-Style
PP15.C.1	B	35.3	25.5	21.1	N/A	No	No	1	22	20-98	Might be unfinished piece or debitage
PP15.C.2	A	10.6	7.3	3.2	N/A	No	No	1	0.4	20-98	Likely debitage
PP17.C.1	A	21.4	16.3	12.6	Rim	No	Yes	1	7.1	43-98	Pierced/drilled piece, sewn with iron, evidenced by rust, soot, one one side
PP25.C.1	A	18.2	14.7	10	Body	No	No	1	4.5	7-112	Rough exterior, possibly poor quality vessel.
TU1-7.C.1	B	35.8	27.6	7.5	Body	No	No	1	13.2	78-122	
TU2-2.C.1	B	42.6	38.2	29	Leg	No	No	1	89.4	15-35	Four surfaced leg and foot, smoothed on all sides
TU2-3.C.1	A	17.5	12.9	7.2	Body	No	No	1	2.1	35-65	Smoothed both
TU2-3.C.2	A	17.6	17	4.4	Body	No	No	1	2.4	35-65	
TU2-3.C.3	B	30.9	26.2	10.5	Lid	No	No	1	13.1	35-65	Grooved edged lid, smooth exterior, rough interior
TU2-3.C.4	B	34.5	34.1	17.4	Rim	No	Yes	1	32.2	35-65	Flat rim, (90 degrees to exterior), smoothed exterior; reworked as counter/gaming piece?
TU2-3.C.5	B	38.9	11.2	6.1	Body	Yes	No	1	4.7	35-65	Line in reflief, grooving on exterior, black burnished interior
TU2-3.C.6	C	63.8	42.7	7.2	Body	Yes	No	1	32.6	35-65	Parallel lines in relief on exterior, smoothed both, Vohemar-Style
TU2-4.C.1	B	46.5	36.7	35.2	Body	No	No	1	86.5	65-105	Possibly a leg fragment, smoothed surfaces, deep scratches
TU2-4.C.2	B	29.1	28	18.9	Body	No	Yes	1	20.6	65-105	Possible gound/reworked edges, smoothed surface
								19	**382.3**		

Table 1: Chlorite schist analysis: all units.

Appendix IX: Metal Artefact Analysis Supplementary Data

UNIT/CONTEXT	Pellet	Slag	Other	Count	Weight (g)	DBS (cm)	Comments
PP2	-	2	-	2	6.4	17-101	
PP5	-	1	-	1	6.1	11-105	
PP9	1	-	-	1	0.3	88	
PP10	-	1	1 coin fragment	2	27.1	19-99	Coin found at 72cmbs
PP11	-	2	-	2	0.3	25-100	
PP13	1	-	-	1	0.2	10-99	
PP14	-	-	1 rod	1	1.3	70	
PP15	1	-	-	1	2.8	40	
PP18	1	-	-	1	0.1	44-79	Weight < 0.1g
PP21	2	-	1 clipping	3	0.2	92-121	
PP22	3	-	-	3	0.2	74-109	
PP23	1	-	-	1	0.1	10	
PP24	-	1	-	1	1.5	7-105	
PP25	2	-	1 clipping	3	0.4	7-112	
TU1-2	-	2	-	2	0.2	19	
TU1-3	7	-	-	7	0.3	20-40	4 pieces found at 38 and 40cmbs
TU1-4	1	-	-	1	0.1	30-40	
TU1-4	2	-	-	2	0.1	40-48	
TU1-6	9	1	1 clipping	11	0.5	48-75	
TU1-7	-	1	-	1	0.1	78	Weight < 0.1g
TU1-8	4	-	-	4	0.3	100-133	
TU2-2	9	4	-	13	28.8	18-35	
TU2-3	96	-	1 copper lump	97	4.6	35-65	
TU2-3	10	-	1 copper lump, 1 needle frag, 3 clippings	14	2.3	65-92	
TU2-4	24	1	1 needle, 1 chainlink, 5 clippings	32	1.5	65-105	
TU2-5	10	-	4 clippings	14	0.7	105-190	
TU2-6	1	-	-	1	0.1	105-194	Weight < 0.1g
Total:	184	15	22	222	86.6		

Table 1: Metal artefact analysis: all units.

Appendix X: Shell Artefact Analysis Supplementary Data

UNIT/CONTEXT	Indeterminate	Type 1 (*Arcidae Andara antiquate*) PE	Type 2 (*Oxymeris maculata*) E	Type 3 (*Neritidae*) NE	Type 4 (*Pteriidae*) E	Type 5 (*Tridacna squamosa*) E	Type 6 (*Fasciolariidae Fusinus tuberculatus*) NE	Count	Weight (g)	DBS (cm)
PP1	-	-	4b	-	-	-		4	97.3	44-88
PP2	-	1b	2b	-	-	-	-	3	20.6	25-101
PP3	-	-	1c	-	-	-	-	1	12.2	10-80
PP4	-	-	1b	-	-	-	-	1	7.8	15-118
PP5	-	1a	2a, 3b	-	-	-	1c	7	120.6	11-105
PP7	-	-	2a, 1b	-	-	-	-	3	17	10-101
PP8	-	1b	1a	-	-	-	-	2	3.8	20-99
PP9	-	-	1a	-	-	-	-	1	2.2	15-114
PP11	2a	1a, 3b	5a, 3b, 1c	2a	2a, 1b	-	-	20	96.5	25-100
PP13	-	-	1a, 1b	-	-	-	-	2	29.8	10-99
PP14	-	-	1b	-	-	-	-	1	8.8	25-101
PP16	1a	-	1a	-	1a, 1b	-	-	4	6	12-36
PP17	-	1b	-	-	-	-	-	1	2.4	43-98
PP18	-	-	1a	-	-	-	-	1	1.6	44-79
PP19	1a	-	-	-	-	-	-	1	0.5	14-69
PP20	-	-	1a	-	-	-	-	1	1.3	30-105
PP23	1a	-	1a	-	-	-	-	2	6.3	5-108
PP25	1a, 1b	-	2a, 4b	-	-	-	-	8	30.3	7-112
TU1-2	-	-	1b	-	-	-	-	1	2	7-20
TU1-3	-	-	1b	1a	1b	-	-	3	46.2	20-40
TU1-4	-	-	1a	-	2a, 1b	-	-	4	6.7	40-48
TU1-6	2a	-	5a, 4b, 2c	1a	5a, 2b	-	-	21	80.7	48-75
TU1-7	10a, 3b	-	19a, 5b, 4c	6a	5a	1a, 3b, 1c	-	57	284.8	75-100
TU1-8	7a, 3b	2a, 3b, 1c	37a, 13b, 3c, 1d	1a	11a, 3b	-	-	85	430.8	100-133
TU2-2	1a	-	6a, 10b	-	-	-	-	17	182.1	15-35
TU2-3	4a	1a, 2b, 1c	42a, 13b, 2c	5a, 1b	2b	-	-	73	328.1	35-65
TU2-3	1a	1b	9a, 4b, 1c	2a	-	-	-	18	124	65-92
TU2-4	8a, 1b	1c	25a, 6b, 2c	3a	1a, 5b	1c	-	53	318.4	65-105
TU2-5	1a, 1b	1a, 3b, 1c	16a, 5b, 1c	4a	2a, 4b	-	-	39	182.5	105-190
TU2-6	-	-	2a	-	-	-	-	2	3.2	105-194
Total:	40a, 9b	6a, 15b, 4c	180a, 81b, 17c, 1d	25a, 1a	29a, 20b	1a, 3b, 2c	1c	**436**	**2454.5**	

Table 1: Shell artefact analysis: all units.

Appendix XI: Stone Artefact Analysis Supplementary Data

UNIT/CONTEXT	Indeterminate	Quartz	Rock Crystal	Sandstone	Limestone	Count	Weight (g)	DBS (cm)	Comments
PP2	-	3a, 1b	-	-	-	4	18.6	25-101	
PP3	-	1a	-	-	-	1	0.8	10-80	
PP4	-	3a	-	-	-	3	3.2	15-118	
PP5	-	4a	-	-	-	4	16.8	11-105	
PP6	-	2a	-	-	-	2	4.9	40-102	
PP7	-	2a, 1b	-	-	-	3	38	10-101	
PP8	-	3a	-	1c	2a, 1b	7	132.2	20-99	
PP9	-	3a, 1c	-	-	-	4	172.6	15-114	
PP10	-	4a, 1b	-	-	-	5	14.7	19-99	
PP11	-	-	-	1a, 1b	-	2	85.7	25-100	
PP12	-	1a	-	-	-	1	1.8	15-105	
PP13	-	1a	-	-	-	1	1.6	10-99	
PP17	-	-	-	1b	-	1	18.8	43-98	
PP19	-	1a	-	-	-	1	1.2	14-69	
PP20	-	1a	-	-	-	1	1.2	30-105	
PP22	-	1a	-	1a	-	2	3.3	20-109	
PP24	-	-	-	1c, 1e	-	2	857.6	64	
PP25	-	3a, 1b	2a	-	-	6	47.3	7-112	Rock Crystal found at 68 and 112cmbs
TU1-2	-	1b	-	-	-	1	73.7	7-20	
TU1-3	-	1a	-	-	-	1	10.5	20-40	
TU1-4	-	1a	-	-	-	1	0.6	40-48	
TU1-6	-	1a	-	-	-	1	1.8	48-75	
TU2-1	-	9a	-	-	-	9	11.1	5-21	
TU2-2	-	8a, 2b	-	1b, 1c	2a	14	256.6	15-35	Worked mudstone/sandstone
TU2-3	1a, 1c	4a, 3b	-	-	-	9	331.7	35-65	Utilized quartz cobble
TU2-3	-	1a	-	-	-	1	2.8	65-92	
Total:	1a, 1c	58a, 10b, 1c	2a	2a, 3b, 3c, 1e	4a, 1b	**87**	**2109.1**		

Table 1: Stone artefact analysis: all units.

Appendix XII: Miscellaneous Artefact Analysis Supplementary Data

UNIT/CONTEXT	Count	Weight (g)	DBS (cm)	Comments
PP4	1	0.2	15-118	
PP8	2	0.6	28	
PP11	1	0.4	25-100	
PP25	3	0.5	50	Glass found adjacent to black bead
TU1-8	1	0.2	100-133	
TU2-1	1	0.1	5-21	
TU2-2	1	0.3	15-35	
TU2-3	12	1.3	35-65	
TU2-3	3	0.7	65-92	
TU2-4	7	0.8	65-105	
TU2-5	3	0.6	105-192	
Total:	35	5.7		

Table 1: Vessel glass artefact analysis: all units.

UNIT/CONTEXT	Mica Count	Mica Weight (g)	DBS (cm)	Comments
PP22	2	0.1	74-109	
TU1-6	1	0.1	48-75	Mica wieght < 0.1g
TU1-7	4	0.1	85	Mica wieght < 0.1g
TU1-8	5	0.1	121	
TU2-2	1	0.1	15-35	Mica wieght < 0.1g
TU2-4	6	0.1	65-105	Mica wieght < 0.1g
TU2-5	6	0.1	105-190	Mica wieght < 0.1g; Pet. Wood found at 115cmbs
TU2-6	4	0.1	105-194	Mica wieght < 0.1g
Total:	29	0.8		

Table 2: Mica analysis: all units.

UNIT/CONTEXT	Pet. Wood Count	Pet. Wood Weight (g)	DBS (cm)	Comments
PP22	-	-	74-109	
TU1-6	-	-	48-75	Mica wieght < 0.1g
TU1-7	-	-	85	Mica wieght < 0.1g
TU1-8	-	-	121	
TU2-2	-	-	15-35	Mica wieght < 0.1g
TU2-4	-	-	65-105	Mica wieght < 0.1g
TU2-5	1	20.6	105-190	Mica wieght < 0.1g; Pet. Wood found at 115cmbs
TU2-6	-	-	105-194	Mica wieght < 0.1g
Total:	1	20.6		

Table 3: Petrified wood analysis: all units.

UNIT/CONTEXT	Pigment Count	Pigment Weight (g)	DBS (cm)
PP22	-	-	74-109
TU1-6	1	1	48-75
TU1-7	-	-	85
TU1-8	-	-	121
TU2-2	-	-	15-35
TU2-4	1	1.2	65-105
TU2-5	-	-	105-190
TU2-6	-	-	105-194
Total:	2	2.2	

Table 4: Pigment analysis: all units.

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