Power and Competition in the Upper Egyptian Predynastic: A View from the Predynastic Settlement at el-Mahâsna, Egypt.

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This dissertation is dedicated to the memory of

Charles R. Anderson
1938-1999

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Questions concerning the basis of power and processes which lead to social stratification have occupied anthropological research for decades, resulting in a number of competing schools of thought. This research examines two of these; factional competition and managerial models for the rise of social complexity. Factional competition models propose that individuals are in a constant state of competition for power and leadership positions and use a variety of arenas and methods by which to compete. Managerial models on the other hand suggest individuals are given power by the populace in exchange for managing subsistence goods and production for the overall benefit of the society.

These models are evaluated in light of evidence from the Predynastic period cultures of Upper Egypt, where scholars have suggested that each of these models reflect the processes which led to the formation of the centralized Egyptian state. Data for this study was obtained through a program of systematic surface collections and new, large-scale excavations at the Predynastic settlement site of el-Mahâsna. Patterns of artifacts and activity areas revealed through these efforts are evaluated against implications for intrasite patterning derived from managerial and factional competition models specifically proposed for the Nile Valley.

Results of this study suggest that elites during the later Naqada I and early-mid Naqada II periods were not heavily involved in the management of subsistence goods, nor do they appear to have been competing through large scale feasting or the production of luxury goods for use in the funerary industry, as suggested. Further, results from this study suggest that competition for power in the Nile Valley may already have progressed beyond the level of individual communities, and may have been taking place at a regional level between established leaders by the mid-Naqada I. Finally, the data from el-Mahâsna reveals a pattern of elite activities focused upon ritual and ceremony associated with a possible early cult structure.

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1.0 COMPETITION FOR POWER AND THE DEVELOPMENT OF SOCIAL COMPLEXITY

Traditional cultural ecology models for the development of social complexity have looked upon the emergence of elites as a coping mechanism or adaptation to specific environmental conditions such as the need for subsistence product redistribution (Sahlins 1963; cf. Earle 1977; see Brumfiel 1994 for a complete discussion) or to manage subsistence risk caused by intensification (Earle 1987:293; Lightfoot 1983; Upham 1983). In such cases, the power of those individuals controlling resources comes from the populace in exchange for the benefits reaped by the populace as a result of a ruler's activities. Ruling individuals are merely an adaptation for better survival within a larger system composed of social and environmental subsystems. In these models, elites are "big-hearted" individuals who manage for the good of the whole community. Models of this kind have been called "managerial" (Earle 1987:292-293) and "consensus" or "voluntaristic" (Carneiro 1970:733, 1981:64). Such models have been questioned (Earle 1977, 1978, and 1987) and it has been proposed that elites really perform their duties in order to further their own goals and activities (Earle 1977; Hayden and Garget 1990; Brumfiel and Fox 1994).

Recently models have been developed which view society as an arena within which prospective leaders compete with one another to attract supporters and further their own ambitions (Brumfiel and Fox 1994). In these models of factional competition, rulers acquire and expand their power by increasing the number of their supporters. However, these supporters must be maintained by receiving either benefits or perceived benefits as a result of their allegiance to a particular faction

Leaders obtain power either directly in the form of control of resources, or through the support of their faction. According to Earle (1991a), following Mann (1986), power can be divided into the component realms of economic, political, and ideological. While control of one or several of the realms may provide an individual or group/faction with temporary power, it is only with the consolidation of power within all the realms that long lasting control can be attained and maintained (Earle 1991; Kirch 1991; Savage 1995).

Traditionally, anthropologists have distinguished between two systems of social hierarchy: (1) the power of elites is based on prestige; and (2) the power of elites is based on control and/or production of basic resources and the acquisition of wealth (D'Altroy and Earle 1985; Earle 1978; Fried 1967; Sahlins 1963, 1972; and Service 1968). Prestige systems have been seen as representing an earlier stage in the evolutionary development of complex social systems. However, these two systems need not be seen as separate, contrasting systems. Factional competition provides a means to integrate these two models of prestige and resource control that have been perceived as antithetical. In fact, taken together, these two models provide a wider arena within which competition for power and supremacy can take place.

In prestige systems, individuals gain power and prestige through the redistribution of wealth and resources which is accomplished by gift giving, ceremonial exchange, feasting, and the sponsorship of public ceremonies and rituals (Sahlins 1963). For instance, feasting entails the production of subsistence surplus which can be consumed during feasting events. Additionally, surplus is needed so that it might be converted into other wealth and prestige goods to be used in ceremonial exchanges, gift giving, and ceremonial displays. In order to accomplish such activities, individuals must successfully persuade family members or others to produce the products needed for such displays. One way to increase one's ability to compete in such systems is through successful manipulation of the domestic cycle (Gallant 1991) enabling an increase in kin membership through either reproduction (Clark and Blake 1994), or the adoption of individuals such as orphans and widows (Gallant 1991) or the taking of multiple wives (Clark and Blake 1994). Further ability to increase surplus resources is available through acquiring resources from supporters who act as "backers" in the bid for power.

In systems of resource control, individuals have control over basic resources and/or the means of production of these resources. Ownership of land, storage facilities, and productive technology may reflect control over subsistence goods (Earle 1991a,1991b; Gilman 1991). Control of wealth items may include ownership of the specific localities where raw materials are found (Suttles 1991), rights to the exclusive use of certain species of animals and plants (Earle 1977, 1987, 1990; Dillon 1985) or the "ownership" or monopolization of trade routes or trading partners (Brunton 1975; Burns, Cooper and Wild 1972; Feil 1982; Helms 1979). Additionally, elites may control resources through controlling the labor necessary for the production of such resources as in the case of elite patronage of craft specialization (Brumfiel and Earle 1987).

Elites may sanction their control of resources by means of an ideology which emphasizes their necessity in the maintenance of local subsistence fertility through rituals and ceremonies (Earle 1991; Hassan 1988, 1992). Further, elites can utilize ideology as a motivating factor for production of resources needed for these rituals and ceremonies. By organizing these rituals, elites establish control of surplus production and can appropriate portions for their own use (Stein 1994; Fernea 1970). Elites may further legitimize their power, land-ownership and control of resources through an ideology which stresses ancestor worship or the importance of lineage descent (Earle 1991; Hassan 1988, 1992; Renfrew 1984a, 1984b).

Elites additionally may utilize foreign symbols, ideology and knowledge to legitimize their control of basic resources. Helms (1979) has shown how possession and control of objects obtained through long distance trade often imbues those individuals with esoteric knowledge which can be used to legitimize power and control.

Both prestige and resource control systems provide a broader spectrum of avenues that elites may pursue in their machinations for power acquisition. In managerial models, elites may utilize methods from either system to demonstrate their necessity in the maintenance of society. In models of factional competition these same avenues may be utilized by elites in building their factions and alliances. Both approaches have been proposed to explain the development of social complexity and state formation in the Nile Valley. This research proposes to identify to what extent the development of complex society can be understood from the perspective of managerial benefits and to what extent from the perspective of elite competition for power. In order to do so, data obtained from the Upper Egyptian Predynastic settlement site of el-Mahâsna will be evaluated in light of managerial and competition models.

1.1 MODELS FOR THE DEVELOPMENT OF SOCIAL COMPLEXITY IN THE NILE VALLEY

Managerial and factional competition models have been proposed to understand the formation of the ancient Egyptian state by Hassan (1988) and Kemp (1989, 2006). Hassan proposes that the development of a "managerial" elite was an "attempt to dampen the effect of agricultural fluctuations" (1988:165). According to Hassan the "...uniformity of the Nile Valley is a cartographic illusion; the area of cultivable land for a village varies annually, not just because of variations in floodstage height, but also due to local changes from unusual siltation or breaching of levees or embankments" (1988:168). These varying environmental conditions lead to a situation in which periodic crop shortages are a way of life. It is precisely this inherent condition of settled agricultural life that Hassan sees as leading to the emergence of an elite class.

Given these environmental effects on agricultural production, elites emerge in order to manage the intracommunity production and storage, and intercommunity exchange of subsistence goods during times of shortage. Elites serve a managerial function which causes "mutual long-term benefits" and is supported by the producers of subsistence products "because of its benefits to all participants" (Hassan 1988:168-169).

Hassan's model views ideology as playing an integral role in "choosing" and legitimizing those who are to become community leaders/elites (1988, 1992, 2004). According to the model, descent in early Neolithic villages in Egypt was matrilineal with some senior, female lineage heads being singled out for their supernatural power associated with fertility and crop production. Sons, real or fictive, of these chosen females were placed in positions of community leadership and management of communal agricultural resources (Hassan 1988:169-170). Hassan further integrates the role of ideology by stating that "the ability of leaders to integrate resources and mobilize people for cooperative agricultural work, defense, or conquest were primarily a function of their image as agents of divine power," (Hassan 1992:319). The leaders' continued authority relied upon the community's continued acceptance of their "god-given" right to rule and benefits or perceived benefits that the community received as a result of these leaders' actions.

In order to maintain their "right to rule" elites fused their religious power with a multitude of funerary and luxury goods imbued with iconography which legitimated their supremacy (Hassan 1988:163). In many cases these items were symbols of power and status which originated in, and were used to mark these individuals during intergroup interactions (Hassan 1988:169; see also Shortman and Urban 1987). Regional and district chiefs utilized luxury goods in order to bestow status upon and obtain support from local or village level chiefs (Hassan 1988:172). The demand for luxury and exotic goods stimulated sponsorship of craft specialization and trade leading to increased interregional interactions (Hassan 1988:170).

In summary, Hassan's model sees elite power and authority coming from a communal consensus based upon perceived divine right of the individual or family to rule, as well as benefits that the community received as a result of these actions of elites as managers alleviating subsistence risk through production, storage and intercommunity exchange. Since elites are granted their power by the community, only at the supra-community level would one expect to see competition for power taking place between leaders vying for authority over larger regions of the landscape. Therefore, if Hassan's model is an accurate reflection of the development of centralized authority in the Nile Valley, then we should not see evidence of competition for power within settlements, but rather see evidence for a single, unified elite group managing the internal affairs of the community for its benefit.

Alternatively, Kemp (1989, 2006) suggests that the process of competition for power in order to benefit a few individuals and their factions provides a more adequate model for the development of centralized leadership in Egypt. In accordance with Hassan, Kemp (2006:74) believes that the development of social complexity and power hierarchy are an outcome of factors inherent in sedentary agricultural life. According to Kemp, a psychology of territoriality develops from the continued tending and occupation of portions of the landscape. This in turn

> awakens in some a competitive urge, and they see the possibility of obtaining an agricultural surplus, and thus a more satisfactory life, not through extra agricultural work on their own part, but by purchasing it or coercing it from others. The combination of ambition and mystic sense of identity put individuals and communities into potential competition with one another. (Kemp 1989:32)

This process of intra-community and inter-community competition Kemp likens to a game of Monopoly. All the "players" begin with "roughly equal" potential resources and opportunity to succeed. The "players" compete over time with combinations of chances related to environmental and locational conditions and, most importantly, personal decisions by each of the players. "Fortunes" of the players vacillate back and forth in equilibrium, with the eventual advantage of one player upsetting the equilibrium and leading to that player following a trajectory toward overall success at the expense of the other players. Competition takes the form of exchanges of various types of commodities, conflict (Kemp 1989:32) and manipulation of symbols and rituals (1989:35). Kemp (2006:76) points out that the game does not take place within the lifetime of one individual, but rather over multiple generations. I would add that in such cases, it is families, lineages, or other corporate groups (Hayden and Cannon 1982) which are the "players," receiving both benefits and hindrances toward ultimate success from the previous generations' successes and failures.

Even once obtained, ultimate success in the game does not secure indefinite power for the winning "player," but rather the game continues due to processes of decay and fissioning (Kemp 2006:76). Therefore, the competition continues with other "players" trying to better their positions in the game at the expense of those who are already ahead (D.G. Anderson 1994). Although Kemp believes that this competition is taking place everywhere across the landscape, and that it is inevitable that certain players will achieve a position of power and control over others, he also states that for this process to be successful and for the "winners" to maintain their position, an ideology must be fashioned composed of a "wealth of symbol and ritual" that "commands widespread respect"; therefore legitimating a leader's control and power (Kemp 1989:35). Additionally, this competition must take place within an environmental setting which is capable of producing surplus production to be used in competition (Kemp 1989:35; see Hayden and Gargett 1990 and Clark and Blake 1994).

Kemp's Monopoly model focuses attention upon multiple individuals or factions competing at both the internal (community) and external (supra-community/regional) level for power and control. If Kemp's model proves to be an accurate reflection of the competition for authority in the Predynastic, then one would expect to see several foci within a settlement which show evidence for individuals conducting activities associated with competition for power, rather than a single elite group. Further, since this is a continuing process of development and decay, one would also expect to see changes in the number of competitors over time and hence shifts in the number and location of the different loci within the settlement during different periods.

1.2 THE PRESENT STUDY

The implications derived from the models of Kemp and Hassan allow for the development of several hypothetical patterns one would expect to see in the archaeological remains of a Predynastic settlement. This study attempts to examine the models using these patterns to evaluate to what degree each of the models may or may not reflect the processes that were at work within a single Predynastic village in the Abydos region of Upper Egypt—el-Mahâsna. Before defining the specific patterns that will be looked for in the village at el-Mahâsna, it is first necessary to briefly examine the Predynastic culture of Upper Egypt and the socio-cultural changes that occurred during the roughly 1000 year period that has become known as the Naqada period (Chapter 2.0). This is followed by a more specific discussion of the Predynastic period in the Abydos region and el-Mahâsna's place within the regional settlement system. Chapter 3.0 discusses the site of el-Mahâsna and reviews the previous investigations conducted at the site since the early part of the 20th century. It concludes by establishing a series of hypothetical patterns of remains and artifacts that would be expected based on the implications derived from the models of Kemp and Hassan (Section 3.3).

Chapter 4.0 provides a discussion of the methodologies employed in the investigations conducted at el-Mahâsna for the present study since 1995. This includes a detailed explanation of the surface collection strategies and excavation methods used to recover information from the site in order to determine which of the specific patterns defined in Chapter 3.0 are present at el-Mahâsna. This is followed by a discussion of the methodologies employed in the analysis of the large artifact assemblage recovered during these excavations.

Chapters 5.0 and 6.0 present information on the results of the field investigations. Chapter 5.0 details the stratigraphy and features encountered in each of the excavation areas. Chapter 6.0 presents the results of the analysis of the various artifact categories and their distribution within the site area.

Finally, Chapter 7.0 evaluates each of the hypothetical patterns developed in Chapter 3.0 in light of the information presented in Chapters 5.0 and 6.0 It concludes by discussing the successes and failures of applying these two models to a settlement context and makes suggestions on work/data that is needed for future research into the nature of power and the development of social complexity that results in the formation of the ancient Egyptian State.

2.0 PREDYNASTIC PERIOD OF UPPER EGYPT

The period typically referred to as the "Predynastic" covers roughly the time span of 4400 – 3000 B.C. Although most frequently associated with the work of Sir W. M. Flinders Petrie, the term and proper chronological placement of materials associated with these cultures was coined by Jacques de Morgan in 1896. The Predynastic period encompasses the cultures that inhabited Upper, or the area south of modern Cairo; and Lower Egypt, or the area around Cairo and the Delta. It is the former, or Upper Egyptian cultures that will be the focus of this dissertation. This culture which can be divided into the earlier Badarian and later Naqada cultures, is best known from the large cemeteries excavated in the late 19th and early 20th centuries. This chapter provides a basic discussion of the internal chronology of the Upper Egyptian Predynastic, as well as cultural and political developments which took place throughout Upper Egypt. It concludes with a discussion of specific developments in the region centered around Abydos.

2.1 CULTURAL CHRONOLOGY OF THE UPPER EGYPTIAN PREDYNASTIC

The Upper Egyptian Predynastic has been divided into four periods (Table 2.1); the Badarian, Naqada I (Amratian), Naqada II (Gerzean), and Naqada III/Dynasty 0; with the Naqada II being further broken-down in to the Naqada IIa-b (Early Gerzean) and Naqada IIc-d (Late Gerzean).[1] Several recent and thorough summaries of these periods have been published (Bard 1994, 1999; Brewer 2005; Hassan 1988; Hendrickx and Vermeersch 2000; Kemp 1989, 2006; Midant-

[1] Following the convention used in Hendrickx, et. al. (2004) and Levy and van den Brink (2002:9), when dates are given using Kaiser's *Stufen* system (Kaiser 1957, 1990), lower case letter suffixes are used. When dates use the revised system developed by Hendrickx (1989, 1996, 1999), upper case letters will be used.

Reynes 1992, 2000; Savage 2001; Wenke 1989, 1991). Therefore, I have not attempted to duplicate those efforts here, but rather to provide the reader with a brief overview of the cultural developments which take place in each of these subperiods.

Table 2.1: Chronology of the Upper Egyptian Predynastic.

Period	Absolute Dates
Badarian	ca. 4400 – 3800 B.C.
Naqada I (Amratian)	ca. 3800 – 3650 B.C.
Naqada IIa-b (Early Gerzean)	ca. 3650 – 3450 B.C.
Naqada IIc-d (Late Gerzean)	ca. 3450 – 3200 B.C.
Naqada III/Dynasty 0	ca. 3200 – 3000 B.C.

Source: Compiled from information in Patch (1991:Figure 1) and Shaw (2000:479).

2.1.1 Badarian

Although the validity of Badarian as a discrete temporal phase, rather than a regional manifestation of Early Naqada I culture in Middle Egypt (Kaiser 1956:97-98) has been questioned, most scholars prefer to see the Badarian as a precursor to the Naqada I or Amratian culture of Upper Egypt (Friedman 1994; Hendrickx and Vermeersch 2000). The Badarian culture was first discovered and defined by Brunton (1928, 1929, 1937 and 1948) based on extensive survey and excavation work in the area around Hemamieh and Badari in Middle Egypt (Figure 2.1). These efforts identified 42 cemeteries and 46 settlement or habitation sites (Friedman 1994:18). The Badarian artifact assemblage includes lithics, primarily focused on a flake and blade industry, but also including a limited number of fine, bifacial tools, bone and ivory objects, most notably hairpins and a limited number of ivory figures/figurines, limited amounts of copper, and rectangular and oval cosmetic palettes (Midant-Reynes 2000:152-166; Hendrickx and Vermeersch 2000:40-41). Perhaps the most distinctive Badarian artifacts are ceramics from the period. These are simple shaped vessels, typically cups and bowl forms with rounded bases that have a characteristic black topping around the vessel opening that is similar to later Black-topped red ware of the remainder of the Predynastic. However, during the Badarian, the majority of the body of these black-topped vessels is typically much browner in color than the later, more familiar red body Naqada I-II vessels. Perhaps the most distinctive characteristics of Badarian pottery however, are the ripple patterned surfaces that are highly burnished/polished, and the carinated profile also present in many of the vessel forms (Friedman 1994:18; Midant-Reynes 2000; Hendrickx and Vermeersch 2000:40-41).

Based upon data from excavations at habitation sites of the period, Badarian settlements are characterized by concentrations of ash and artifactual materials. Contained within these areas are evidence of posts associated with houses/windbreaks, hearths, and large pits; the latter having been interpreted as storage pits for grain (Brunton 1937:16). Subsistence during the period is based on a combination of both domesticated and wild resources. Agricultural products included barley and wheat as well as lentils and tubers (Hassan 1988: 153-154). Domestic animal resources included livestock of sheep/goat and cattle. The remains of gazelle and various species of fish and fowl indicate that hunting also played a role in subsistence during this period (Brunton and Caton-Thompson 1928:41; Hassan 1988: 154; Hendrickx *et al*. 2001).

Cemeteries of the Badarian period consist of a collection of simple oval or rectangular/subrectangular shaped pits. The cemeteries contain the burials of children through adult age individuals which are found typically in a loosely contracted position on their left sides, often lying upon a mat. The remains of very young children are typically not found in the cemeteries, with the exception of new-born infants (Midant-Reynes 2000:153), but rather in the settlement areas (Hendrickx and Vermeersch 2000:40). While earlier studies of burials from this period have suggested a lack of social stratification (Castillos 1982:69-78), more recent analysis (W. Anderson 1992) has suggested the possibility of a two tiered social system (Friedman 1994:19); however, our knowledge of Badarian society is still far from complete.

2.1.2 Naqada I

Our knowledge of the Naqada I period is almost entirely derived from cemetery contexts, with very few settlements of the period having been investigated. Kaiser (1957) has divided the Naqada I into three sub-periods, or *Stufen*, Naqada Ia, b, and c, based on changes he recognized in the mortuary ceramic assemblage. While the Naqada I period represents a continuation of Badarian lifeways, data indicates that several changes in socioeconomic organization took place during the Naqada I. These changes include a more standardized funerary treatment (Castillos 1982:174ff), an extension of the ceramic assemblage, and evidence for more long distance trade seen in materials indicating connections with Lower Egypt, Nubia, and the Red Sea coast (Friedman 1994:24-25; Rizkanna and Seeher 1984; 1987:66-73; S. Smith 1991).

Ceramics of the period are dominated (at least in the cemetery contexts) by the familiar Black-topped red ware (B-ware) and Polished red wares (P-ware). Both of these types are characterized by vessel surfaces that are red in color and highly polished/burnished, with B ware differing from P ware primarily in the presence of a blacked zone surrounding the vessel opening and extending to varying degrees down the walls of the vessel. The Naqada I period is also know for the occurrence of the rarer White Cross Line (C-ware) ceramics consisting of a polished red ware that has the addition of designs painted in white pigment, typically consisting of geometric patterns, but also figural designs of both animal and human motifs. It is the presence of this ceramic type that most distinguishes the period from the succeeding Naqada II.

Other artifacts from the Naqada I include various bone and lithic tools; figurines of both clay and ivory; the appearance of stone vessels; and an increase in the occurrence of copper items and evidence for the smelting of copper. Also present are bifacially worked lithic tools, particularly finely flaked lances and the fishtail knives that are similar to the Dynastic period *psš-kf* knives (Roth 1992). Groundstone cosmetic palettes of the Naqada I period are rhomboidal in shape during the earlier sub-phases of the period, but by the Naqada Ic various animal and fish forms have also developed, as well as the "pelta" or boat-like forms (Regner 1996).

It is during this period that we see the beginnings of artifacts that appear to represent displays of status or class differentiation. These are most clearly seen in the appearance of discoid mace heads manufactured of hard stones, but also limestone, pottery and unfired clay (Midant-Reynes 2000:179-180). These items are believed to have been used as portable symbols of power based on their recovery from only the larger tombs of the period and are believed to form "essential aspects of the chieftaincy" (Midant-Reynes 2000:180). In addition to actual artifacts, items containing elements of "royal" iconography dated to the late Naqada I have been recovered at Abydos (Dreyer 1995).

Cemeteries of the Naqada I period are similar to those of preceding Badarian with the majority of individuals having been interred in pit graves "on their left-hand sides, in a contracted position, with the head to the south, looking towards the west" (Midant-Reynes 2000:170). Castillos (1982) has documented that there is a small number of individuals who were buried in larger and better equipped tombs than during the previous period. Cemetery evidence points to a two tiered social hierarchy, with a limited number of richly endowed graves present within individual cemeteries of the period (Bard 1994; Castillos 1982; Wilkinson 1996).

Settlements of the period are not well known and have received less attention traditionally than the better know cemetery sites. However, data available from settlement contexts suggests that village life was dependent upon agricultural production, domesticated animal husbandry, and fishing, with a decrease in the importance of hunting activities (Midant-Reynes 2000:184-185; Friedman 1994:26). Domesticated plant remains recovered include barley and wheat and possibly peas, vetch and *nabk,* or Christ's-thorn bush, berries. Faunal remains recovered from Naqada I settlements reveal that cattle, sheep, goat, and pigs are all being maintained as livestock and utilized in the subsistence strategies of inhabitants, along with substantial quantities of fish (Brewer 2005:92; Midant-Reynes 2000:185).

Settlements themselves were composed of small huts or shelters congregated to form small villages or hamlets. These living structures were associated with pits (presumably storage), hearths, and refuse areas (Friedman 1994:26). Our knowledge of settlement patterns for the period is limited to the low deserts areas bordering the alluvial plain, where Naqada I settlements are often located on spurs or rises (Hassan 1991, 1998; Patch 1991). Existing settlement data shows evidence for the development of craft specialization and specialized production areas within settlements. Further data from settlement contexts shows small scale regional ceramic and lithic assemblages indicative of low levels of regional social organization (Holmes 1989; Friedman 1994).

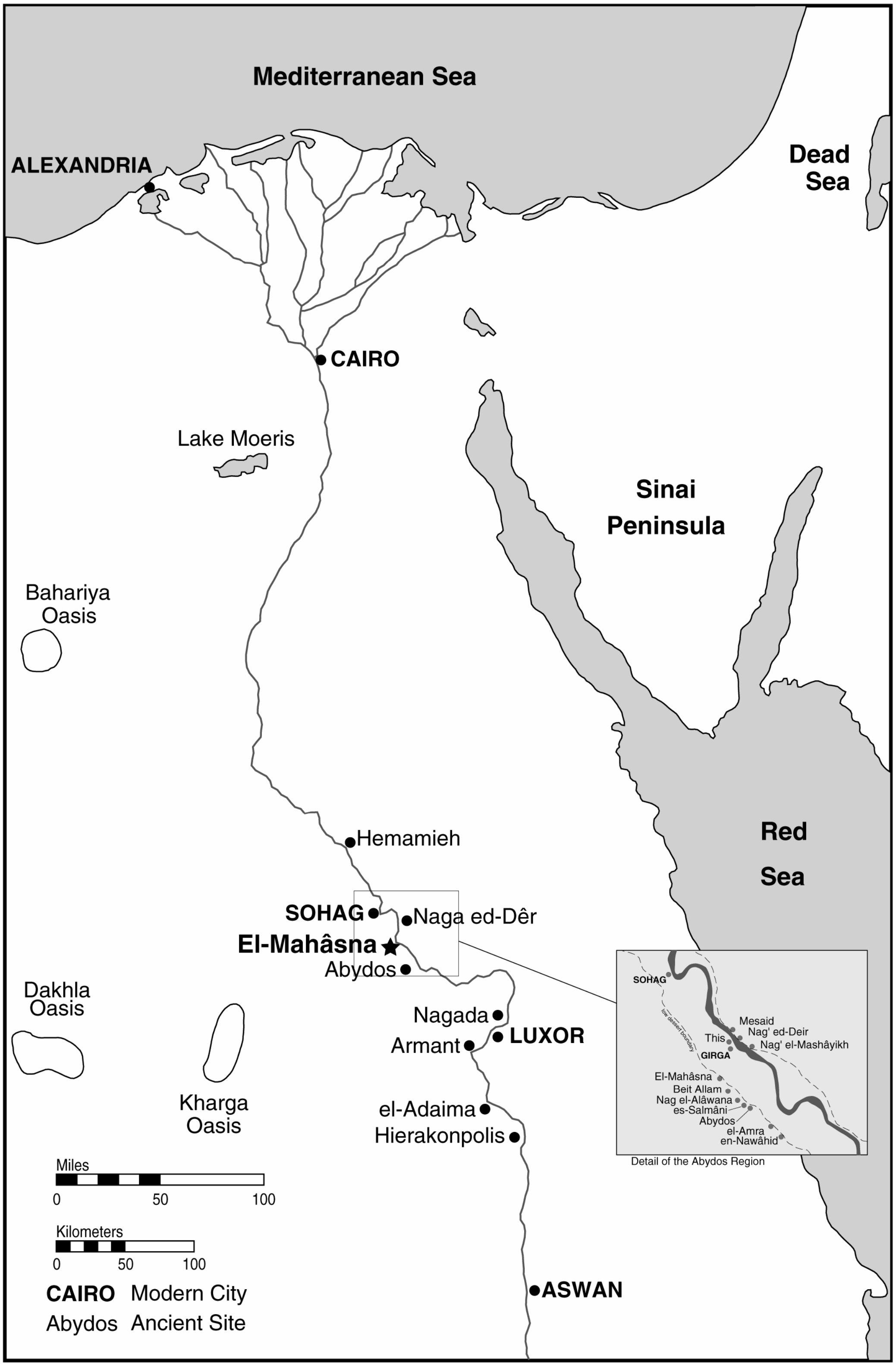

Figure 2.1: Map of Egypt showing Predynastic sites discussed in the text.

2.1.3 Naqada II

The Naqada II period has been divided by Kaiser (1957) into four sub-phases, Naqada IIa-d based on variations in the mortuary ceramic assemblages. However, the Naqada IIa still retains several Naqada I traits, namely the occurrence of C ware ceramics, discoid mace heads, and rhomboid shaped palettes (Friedman 1994:28). While some have suggested grouping the Naqada IIa with Naqada Ic, most typically agree that the Naqada II can be subdivided into two primary sub-periods comprised of the Naqada IIa-b, or Early Naqada II, and Naqada IIc-d, or Late Naqada II. (Friedman 1994; Hassan 1988).

The first of these periods, IIa-b (especially Naqada IIa) appears to represent a continuation of the earlier Naqada I lifeways and has been grouped by some scholars with this earlier period. Analysis of cemeteries has revealed a similar two tiered ranked society during the Naqada IIa-b with a progressive enrichment and diversity in the grave assemblages (Friedman 1994:29) There is a continuation of the small scale regional ceramic and lithic assemblages seen during the Naqada I period, while there is an appearance of painted D-ware vessels with motifs that have been interpreted as representing rituals and activities of ideological significance (Friedman 1994:30; Hassan 1988). It is during the Naqada IIa-b period that social changes are set into motion which result in very noticeable changes in the following Naqada IIc-d.

The shift from the Naqada IIa-b to the Naqada IIc-d represents a shift from smaller scale regional polities to much larger scale societies. The Naqada IIc-d period represents a classed society comprised of several large scale polities or kingdoms in Upper Egypt each ruled by single individuals/lineages and centered at Hierakonpolis, Naqada, and Abydos/This (Kemp 1989, 2006). Evidence from cemeteries at Naqada, Hierakonpolis and Abydos from this period support the presence of powerful rulers who are utilizing objects and iconography associated with royalty in later historic periods (Bard 1992, Hoffman 1979, and Dreyer 1992).

Settlements from the period suggest a hierarchy ranging from small agricultural villages to large population centers having evidence of functionally specific zones of craft production, and brewing (Geller 1992), as well as temple/palace areas (Barocas *et al.* 1989; Friedman 1994). There is evidence of increased foreign trade with areas to both the north and south of Upper Egypt. Increased importance of trade within the Nile Valley is also believed to be seen in the depiction of boats on D-ware vessels during this period (Hassan 1988). Increased interaction between regions within the valley can also been seen in the replacement of regional domestic ceramic assemblages by a more homogeneous assemblage throughout Upper Egypt (Friedman 1994:2). The period is also characterized by an extension of Upper Egyptian cultural traits out of Upper Egypt; possibly resulting from colonization and conquest of the surrounding areas by Upper Egyptians. However, the evidence upon which this interpretation is built is debated (Friedman 1994; Kaiser 1957, 1985, 1990; Köhler 1992, 1995).

2.1.4 Naqada III/Protodynastic

The Naqada III or Protodynastic period is a transitional period between the developments that have been taking place during the preceding Late Naqada II period and the initial stages of the Early Dynastic period. Subdivisions of the Naqada III were defined by Kaiser (1957, 1985, 1990) using a combination of the degeneration in the decoration of D ware vessels and the form of Wavy-handled jars, which first appear in the Naqada IIc. Following Wilkinson (1996), this period can best be divided into two sub-periods, Early Naqada III and Late Naqada III. The first of these sub-periods, the Early Naqada III includes Kaiser's IIIa2 and Hendrickx's (1996) IIIA1-IIIA2 and represents the period that encompasses a series of anonymous rulers known only from their elaborate burials (Wilkinson 1996:11-12). Late Naqada III, on the other hand, includes Kaiser's IIIb1-IIIb2 and Hendrickx's IIIB, and corresponds roughly to Dynasty 0, or that period comprised of a series of rulers known from inscriptions who were in power prior to Narmer.

It is sometime during the Naqada III that unification of Egypt takes place. A series of elaborate tombs uncovered at Abydos (Dreyer 1992) show what appear to be a succession of royal elites. However, it is not known if these rulers controlled the entire valley, or were simply rulers of a regional kingdom centered at Abydos/This (Wilkinson 1996:7). However, Tomb U-j at Abydos dates to the Early Naqada III and shows evidence, in the form of linen dockets which name estates in Lower Egypt, that the rulers at Abydos may have exercised control over this region as early as the Early Naqada III (Dreyer 1992; Friedman 1994).

2.2 PREDYNASTIC OF THE ABYDOS REGION

The Abydos region of Upper Egypt is an important area for the study of the early development of Egyptian civilization. Situated in the center of the region is the early cult center and cemeteries of Abydos. The area encompassed by this discussion stretches from the center approximately 20 km north to Nag' ed-Deir and 20 km south to el-Barâghît; about two-thirds of the historically known Thinite Nome (Patch 1991:21). The region is characterized by a wide, relatively level floodplain along the banks of the Nile River. Along the eastern and western margins of the floodplain, the low desert plain extends back to high, steep cliffs which rise up to the high desert plateau. Bisecting the low desert plateau are several wadis where old stream channels and rain runoff from the high desert have carved channels into the low desert surface on their way to the Nile River floodplain.

Archaeological research in the Abydos area has long been interested in the Predynastic and Early Dynastic periods. Early in the 20th century, many important excavations focused on Predynastic period remains, particularly cemeteries. In 1900, Randall-MacIver and A.C. Mace(1902) excavated the important Predynastic cemetery at el-'Amra. Hundreds of shallow graves were excavated revealing burial remains from all periods of the Predynastic. Other important early excavations were conducted at the cemeteries of Nag' ed-Deir (Lythogoe 1965; Mace 1909; Reisner 1904, 1908), el-Mahâsna (Aryton and Loat 1911), Nag' el-Mashâyikh (Fischer 1913), Beit Allam (de Morgan 1897; Garstang 1903), and the numerous cemeteries at Abydos (Cemeteries B, C, D, E, G, U, X, and ϕ [Aryton and Loat 1911; Naville 1914; Peet 1914; Petrie 1902; and Randall-MacIver and Mace 1902]). More recently, excavations of cemeteries at Deir el-Nawâhid (Asfour 1979) and es-Salmâni (el-Sayed 1979) have increased our knowledge of the burial practices and social organization of Predynastic society in the region.

In addition to the excavation of cemeteries, early archaeologists also excavated at several habitations or settlement sites within the region. T. Eric Peet (1914), while excavating Predynastic and later dynastic tombs at Abydos, discovered and excavated the remains of a late Predynastic period settlement. At the same time, John Garstang identified the settlement at el-Mahâsna. These settlements provide valuable information for reconstructing the daily life of the Predynastic inhabitants of the region.

Although settlement sites in the Abydos region were investigated in the early 20th century, it was not until the final decades of the last century that any serious attention was paid to the larger pattern of Predynastic habitation of the region. In 1982-83, Diana Craig Patch conducted a large scale regional survey of the low desert plain in the Abydos region in order to locate all preserved Predynastic remains (Patch 1991, 2004). Her survey identified both settlement and cemetery sites. Using this information, Patch was able to reconstruct the spatial arrangement of Predynastic villages and towns in the region. Settlements appear to have been evenly spaced, approximately 1-2 km apart, along the low desert's margin. This pattern holds true for the areas north and south of the main Abydos core area. However, there appears to be somewhat greater spacing between the Abydos core area itself and those sites immediately north and south. This may suggest that an artificial "spacing" was maintained between the larger zones of settlement and the adjacent smaller ones than between the individual smaller sites (Patch 1991, 2004).

Based on data collected, Patch concluded that the majority of settlements appeared to be rather uniform in size; 1.5-2 hectares (Nag el-Alâwana, en-Nawâhid, and el-Barâghît) and were typically located on the edge of the low desert, usually adjacent to banks of one of the many *wadis* which cross the low desert plain. These settlements appear to represent small farming villages, especially in the earlier phases of the Predynastic (Naqada I-IIa/b). As the Predynastic period progressed, some nucleation and abandonment of settlements occurred in the region. By the later Naqada II period, populations were concentrated at the Abydos core, el-Mahâsna, and Thinis (Patch 1991:304-308). With the exception of el-Mahâsna, the increase in size of these settlements is only evident in the increased size of the cemeteries at Abydos itself and Nag' ed-Deir, one of the cemeteries for Thinis; unfortunately, the actual settlement of Thinis, later an important nome capital, has never been located. The abandonment of the other settlements may not have been entirely the result of populations nucleating at the larger settlements, but rather a result of settlement patterns shifting from low desert locations to locations within the floodplain itself, but because of overlying flood deposits, these settlements have yet to be located.

The larger settlements at this time show specialized areas within the village for certain activities. By the end of the Naqada II, el-Mahâsna, had grown in size and may have covered up to 7-8 hectares. At the southern end of the site, Garstang (1902, 1903) identified the remains of several kiln structures which he interpreted as pottery kilns. Recently however, Geller, in comparing these to similar structures excavated at Hierakonpolis, has suggested that the kilns are actually beer brewing facilities (Geller 1992). At the Predynastic period settlement just outside the temmenos wall of the New Kingdom temple of Seti I at Abydos, Peet (1914) also identified evidence of specialized activity zones.

Peet's settlement consisted of a layer of dark debris which the excavators interpreted as decayed mud that was used as daub in small wattle-and-daub structures as well as organic and non-organic living debris. Within this stratum of midden were found thousands of flint tools and flakes as well as pottery dating the site to the Naqada IId1-IIIa1 (Patch 1991:437). Two of the more important finds come from these excavations. First, a concentration in the center of the settlement of numerous small stone drills and borers associated with unworked pieces of semiprecious stones and the debris from working these materials was discovered. These objects have been interpreted as being indicative of craft specialization and the manufacture of semi-precious stone beads (Hoffman 1979:151). The second important discovery was a large kiln structure consisting of at least 23 large ceramic vats emplaced in supports made of baked mudbricks (Peet 1914:7). At the time of its original discovery, the excavators interpreted the remains as a kiln for parching large quantities of grain to increase its storage life (Peet 1914:7-10; Peet and Loat 1913:1-7). However, as with the "pottery kilns" at el-Mahâsna, these also have been shown to be large scale brewing facilities (Geller 1992).

Cemeteries in the Abydos region have also received renewed attention. Excavated by George Reisner and Albert Lythgoe in 1902-1904, cemetery 7000 at Nag ed-Deir contained 635 Predynastic period graves dating from all phases of the Predynastic (Lythgoe 1965). These well excavated and documented graves recently have been subjected to a detailed analysis by Steven Savage (1995, 1997). This analysis provides us with valuable data concerning social organization in the region. The cemetery appears to have been divided into two sections, one for the more "elite" of society and a second area for the graves of "commoners." By examining the spatial location of the individual graves and materials recovered from these graves, Savage has presented evidence suggesting that Predynastic society was organized along family lineages. Further, according to Savage, the status of certain lineages appears to have risen and fallen throughout Predynastic. Analysis of the grave goods from the graves of these various lineages suggest that the power and status of individual lineages was based not just on economic wealth, but also on ritual and religion.

In a recent reanalysis of the remains recovered form the Predynastic cemetery at el-Mahâsna excavated by Aryton and Loat (1911), Wilkinson (1996) has documented a pattern of increasing social status, differentiation, and authority at el-Mahâsna during the period of Naqada Ia-IId2 (Wilkinson's Mahasna 1a-2b periods). This is followed by a marked decline in evidence of social differentiation during the Naqada III and Early Dynastic periods (Wilkinson 1996:79). The size and wealth of graves together with the presence of symbols of authority in graves of Naqada Ia-Ic date indicate that marked social stratification was already present in the community at el-Mahâsna. This differentiation increases again during the Naqada IIb-IId2 periods, only to decline during the following Naqada IId2. Wilkinson suggests that the pattern seen at el-Mahâsna during the Naqada I-IId2 is a reflection of the increasing importance of This as a developing regional center, and possible capital for the Kemp's proto-kingdom centered on Abydos/This (Kemp 2006:77; Wilkinson 1996:79). Further, he sees the post-Naqada IId2 decline connected with the decline of This as a major center once Memphis has been established as a national capital (1996:79).

Work by the German Archaeological Institute at the Predynastic Cemetery U in the area of Umm el-Qa'ab at Abydos (Dreyer 1990, 1992, 1993, 1998; Dreyer and Hartung 2000; Dreyer et al. 1996, 1998, 2000, 2003; Hartung 2002) further documents the increasing social stratification that occurs through the Naqada I-III and seems to support Savage's conclusion that the power of early Predynastic rulers was based on a connection with ritual and religion. During the late Naqada I/early Naqada II, tombs in Cemetery U show an increase in size and the number of grave goods included with the deceased, including numerous ceramic vessels; copper objects; ivory and bone combs, tags, and tusks; and anthropomorphic and zoomorphic clay figurines. Several ceramic vessels have been recovered dating to the late Naqada I/early Naqada II which contain decorative motifs suggestive of ritual activities, including hippopotamus and crocodile hunting and dances (Dreyer et al. 1998; Garfinkel 2001; Hartung 2002:1).

By Naqada IIc/d, Cemetery U appear to be restricted to the burial of only high status individuals in very large and rich tombs (Hartung 2002). Along with an increase in the investiture of energy in the construction of the tombs, the grave good assemblages of these tombs increases in both diversity, quantity, and wealth of materials present. These include large numbers of ceramic and stone vessels; gamming pieces and sticks; model vessels; beads of gold foil, amethyst, lapis lazuli and other semiprecious materials; as well as decorated ivory knife handles (Hartung 2002:1). Finally, by Naqada III, all the tombs in Cemetery U are constructed of mudbrick and clearly belong to individuals of exceptionally high status. Most spectacular of these is Tomb U-j which consists of 12 chambers and appears to have been the internment of king Scorpion of Dynasty 0 (Dreyer 1998).

As can be seen from the information presented above, the region surrounding Abydos contains early evidence for the development of social stratification and the development of regional polities, whether we call them chiefdoms, kingdoms, proto-kingdoms, or proto-states. From the limited amount of settlement data available, it appears that at least a two-tiered settlement hierarchy was present by at least the late Naqada II period, with el-Mahâsna, This, and Abydos occupying the upper stratum. Additionally, data from the cemeteries at Abydos, Nag ed-Deir and el-Mahâsna demonstrate the presence of elite individuals/families, and a socially stratified society with these individuals having authority over others. For these reasons, the Predynastic settlement at el-Mahâsna provides a perfect arena within which to examine the development of social inequality during the Upper Egyptian Predynastic.

3.0 THE SITE OF EL-MAHÂSNA

> The ground itself was darker than the desert around, an appearance caused by the mixing of the sand with dust of a dark colour [sic]…Pottery of the pre-dynastic character was common; fragments lay strewn thickly about, while more rarely was to be seen 'blacked-topped' pottery, or an occasional piece decorated with white lines of the kinds familiar in the tombs. (Garstang 1903:6).

3.1 LOCATION AND SETTING OF EL-MAHÂSNA

The Predynastic period remains at el-Mahâsna were first identified by John Garstang during his 1900-1901 excavation season conducted on behalf of the Egyptian Research Account. While originally attracted to the site by the presence of Old Kingdom period tombs, Garstang recognized that the "great number of worked flints and some domestic pottery indicated the presence of a Settlement also of the prehistoric period" (Garstang 1903:1). Although he believed the site to be greatly impacted and disturbed by the construction of the later tombs, he expended more than limited effort in its investigation, conducting one of the earliest, scientific investigations of a Predynastic settlement.

The archaeological site commonly referred to as el-Mahâsna is located approximately 10.5 km north of Abydos and actually consists of two distinct loci of Predynastic activity; a settlement area and its associated cemetery (Figure 3.1). The Predynastic cemetery [26º15'16"N, 31º50'13"E] is situated approximately 0.8 km west of where the low desert borders the cultivation and was investigated by Aryton and Loat in 1909 under the auspices of the Egypt Exploration Fund (Aryton and Loat 1911; see Section 3.2.2 below).

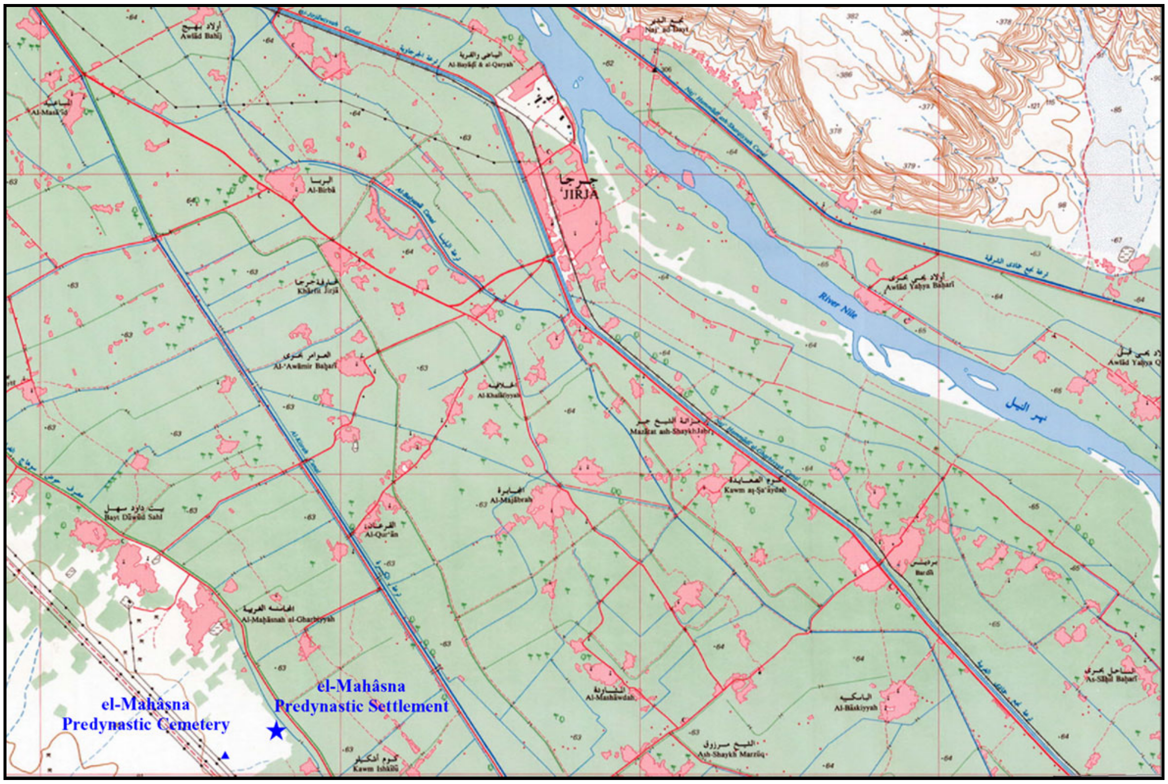

Figure 3.1: Map of the area around el-Mahâsna.

The Predynastic settlement at el-Mahâsna [26º15'39"N, 31º50'26"E], and the focus of this dissertation is located approximately 0.8 km east/northeast of the cemetery and is situated along a prominent rise of the low desert at the edge of the modern cultivation (Figure 3.2 and Figure 3.3). In the area of the settlement, the low desert escarpment rises to heights as great as eight meters above the adjacent alluvial plain in the northern portion, and as little as two meters at the far southern terminus of the site. The settlement area is bounded on the south and north by dry valleys or *wadis*, and is bisected by a wide, shallow depression in its center, which slopes toward the cultivation (Figure 3.4). Encompassing nearly 7.6 hectares, the site extends approximately 608 m along the edge of the low desert escarpment and 155 m into the low desert plain from the edge of the modern cultivation.

The site area is generally characterized by a flat, low desert surface, interspersed with areas of undulating ground with low mounds and depressions. These latter features are the results of later tomb intrusions, earlier excavations by Garstang, and past looting activities. The northern portion of the site, north of Excavation Block 1, is generally undisturbed and consists of a compact, level surface comprised of sand and gravels. Moving southward, the area becomes more undulating and displays evidence of disturbance. The area immediately west of Excavation Blocks 3 and 4 is relatively level, while the areas to the east and south slope toward the cultivation and toward a wide, shallow depression that characterizes the central portion of the site as can be seen in Figure 3.5. The areas to the west and south of the central depression show much more evidence for earlier tomb pits and disturbances caused by earlier excavation/looting efforts (Figure 3.6).

The southern portion of the site has suffered the effects of modern expansion of the zone of cultivation out of the natural alluvial plain and into areas of the low desert. In the far, southern portion of the site, an area of approximately 0.6 ha in size has been entirely destroyed by mechanically lowering the desert surface to the level of the cultivation, and an area of approximately 0.83 ha of the low desert surface has been plowed at least twice between 1983 and the early autumn of 1995 (Figure 3.7 and Figure 3.8). Subsequently, between October 1996 and October 2000, an additional 0.1 ha was destroyed along the boundary between the plowed area and the area of mechanical disturbance. Further a ramp was cut from the plowed area down to the level of the alluvium, destroying an additional 206 m^2 of site area in order to create an avenue of access for tractors traveling from the lower fields to the upper fields located west of the site (see Figure 4.1). The site has further been subjected to agricultural activities by the placement of at least 30 cm of new silts along the southwestern edge of the site. These areas have been continuously planted, typically with tomatoes, since 1995. (Figure 3.9).

Figure 3.2: View of low desert rise looking toward the southern end of el-Mahâsna.

Figure 3.3: View looking north over the modern cultivation from the northern end of el-Mahâsna.

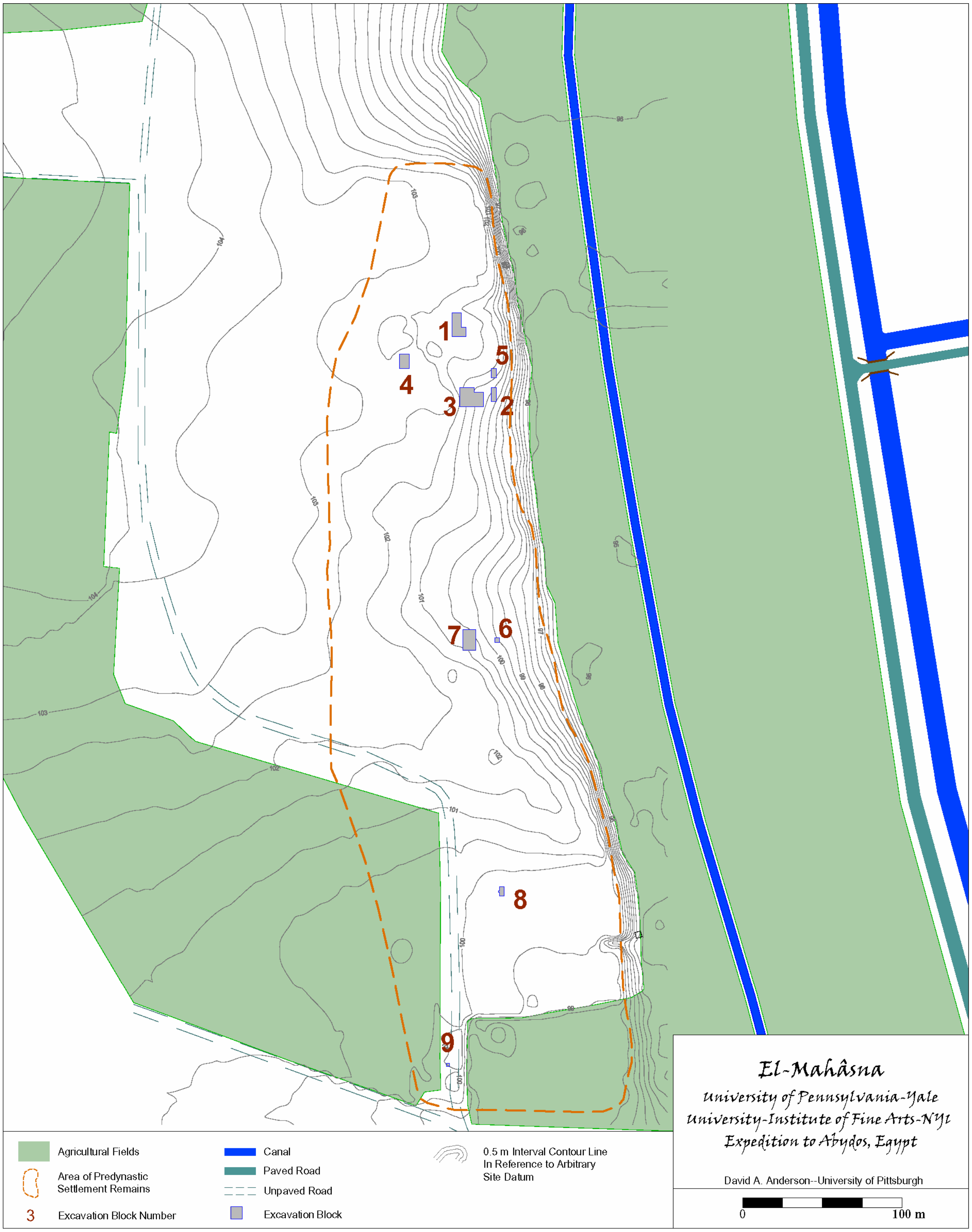

Figure 3.4: Map of the area of Predynastic settlement at el-Mahâsna.

Figure 3.5: View of el-Mahâsna showing the central depressed area.

Figure 3.6: View looking west showing later tomb disturbances south of the central depression.

Figure 3.7: View looking southwest showing destroyed site area at the far southern end of el-Mahâsna.

Figure 3.8: View looking south showing the southern plowed area.

Figure 3.9: View looking northwest showing the area of new fields which border s the southwestern portion of the site.

3.2 PREVIOUS INVESTIGATIONS AT EL-MAHÂSNA

Over the more than a century since its initial discovery, the various Predynastic remains at el-Mahâsna have been investigated (in chronological order) by Garstang (1903), Aryton and Loat (1911), and Patch (1991), prior to the present study. In addition to actual field investigations, data collected at el-Mahâsna by the earlier investigators has figured prominently in Predynastic studies, particularly discussions of ceramic typology and chronology based on materials recovered from the Predynastic cemetery area (Hendrickx 1989, 1996; Kemp 1982; Kaiser 1957; Wilkinson 1993, 1996). In the sections that follow, the work of these earlier field investigators is briefly summarized and discussed. The reader is referred to the original publications for more detailed information.

3.2.1 John Garstang – 1900-1901

In the late autumn of 1900, John Garstang, while working for the Egyptian Research Account, was attracted to the site of el-Mahâsna by the presence of a partially excavated cemetery of Old Kingdom date. Amongst, and apparently partially avoided by these later tombs, were the remains of a prehistoric period settlement which Garstang recognized by the presence of a "great number of worked flints and some domestic pottery" (Garstang 1903:1).

Based upon the topography, Garstang arbitrarily divided the area of el-Mahâsna into four subdivisions which he designated M1 through M4, noting that evidence of the Predynastic settlement was most apparent in sections M1 and M2. Based on the apparent concentrations of settlement debris in these two areas, Garstang defined two separate settlement areas, S1 and S2. These two areas were separated by zones of much lower surface densities of Predynastic artifacts as well as lighter colored sands and silts, although Garstang does note that some evidence of Predynastic habitation was visible in all the sectors of the el-Mahâsna area (Garstang 1903:5-6). These two defined settlement areas, S1 and S2, became the focus of Garstang's attention relative to the Predynastic settlement remains at the site. As a result of this attention and a later misunderstanding of Garstang's descriptions of the areas, an impression of el-Mahâsna as two separate village sites developed which would continue through the 1980s and early 1990s (see sites S83-40 and S83-41 in Patch 1991)

Garstang focused his excavation efforts in area S2 on a "small flat area" adjoining a mound that he interpreted as having been thoroughly disturbed by the activities of the *sebbakhin*.[2] In this area he uncovered structural remains along with debris related to the Predynastic habitation, including numerous intact ceramic vessels. The structural remains found in this area consisted of a series of "wood-piles arranged in some system, and between them the abundant traces of small twigs intertwined and of powdered mud," which he interpreted as evidence of wattle-and-daub construction (Garstang 1903:6). These wood-piles or posts were arranged in lines running roughly north-south and east-west. However, according to Garstang's descriptions as well as the published map of excavations in S2 (1903:7 and Plate IV), only two

[2] *Sebbakh* is the term given to organic-rich soil that is removed from ancient sites to be used as agricultural fertilizer. Those who perform the activity of digging this *sebbakh* are referred to as *sebbakhin* (diggers of *sebbakh*).

walls were present for each structure, one long wall running north-south along the eastern edge of the structure and another running east-west along the northern edge.

Structural remains in area S1 were less definite according to Garstang (1903:7) and while the mud and twigs were present, he did not identify any apparent piles or posts. One feature type identified by Garstang in S1 that was not present in S2 is what he then referred to as a pottery kiln (Garstang 1902:38-40, 1903:7). These structures, now interpreted as being related to beer brewing/production activities (Geller 1992), consisted of a large pot supported by vertical bars of fire-brick.

In addition to various flint implements and sherds of Black-topped red ware, White-crossed line ware, and Rough ware, notable artifacts that Garstang recovered from the Predynastic settlement areas included at least 15 ceramic vessels and a "small stone vessel, of excellent work, fashioned in the form of a seated frog," mace-heads, spindle whorls, and at least one polished stone celt (1903: 6 and Plates III and V).

Figure 3.10 shows the modern map of el-Mahâsna with the approximate location of Garstang's excavations in his area S2. This location was reconstructed based on information available in Plates II and IV of his publication (1903) using the remains of his excavation house as a basis for referencing the earlier maps with the modern map of the site (see Section 5.2.7 below for a discussion of the excavation house remains). Unfortunately, a search for remaining excavation notes and records from the 1900-01 fieldwork among the collections of institutions known to have archives related to Garstang's field activities has, of yet, proved unsuccessful.

3.2.2 Edward Aryton and William L. S. Loat – 1909

As part of the Egypt Exploration Fund's 1908-09 field season at Abydos, Edward Aryton and William L. S. Loat excavated the remains of a Predynastic period cemetery located near the Predynastic settlement at el-Mahâsna. Hearing of extensive looting by villagers taking place at the cemetery in November 1908, Aryton and Loat proceeded to investigate and subsequently began formal excavations in January of 1909.

According to their description, the cemetery covered an area approximately 165 (north-south) x 137 meters (east-west) along the north bank of a broad wadi, approximately a half mile west of the boundary between the low desert and the cultivation (Aryton and Loat 1911:1). The cemetery itself was roughly oval, and portions of it were positioned on the sloping sides of the wadi. This positioning afforded some portions of the site protection from looting as sands had accumulated over the areas on the sides of the wadi to depths of several feet (1911:2). Despite this protection, the baulk of the cemetery had been subjected to extensive looting resulting in approximately more than half the burials being disturbed. During the 1909 excavations, Aryton and Loat excavated approximately 300 of an estimated 600 graves that originally occupied the cemetery. As discussed above (Section 2.2), data obtained from these excavations provides us with evidence of social stratification at el-Mahâsna during the Naqada I-II, with social status and differentiation appearing to have been increasing, only to declines during the Naqada III, when we see evidence for powerful rulers in Cemetery U at Abydos.

3.2.3 Diana Craig Patch – 1982-83

Following the work of Garstang in 1900-1901 and Aryton and Loat in 1909, the Predynastic remains at el-Mahâsna received little attention until 1982-83. At this time, Diana Craig Patch, working under the auspices of the University of Pennsylvania-Yale University Expedition to Abydos, conducted limited surface collections at the sites as part of a larger regional survey of the Abydos region (Patch 1991).

Surface collections conducted by Patch consisted of a stratified random sample of 5 m x 5 m squares (Patch 1991:118). These squares were selected by establishing a grid base line along one edge of the site, and laying out transects perpendicular to the base line every five meters. Each transect was then subdivided in five meter sections along its length. A 10% sample of available squares was then randomly selected (Patch 1991:120-121). Since the purpose of the survey was to obtain information from which to accurately date each of the sites investigated, only those sherds with diagnostic characteristics (i.e. rims, bases, and decorated body sherds) were collected and their information was recorded in the field (Patch 1991:121). Next, all the sherds from each transect were placed in a pile at the end of the transect from which they originated (Patch 1991:122).

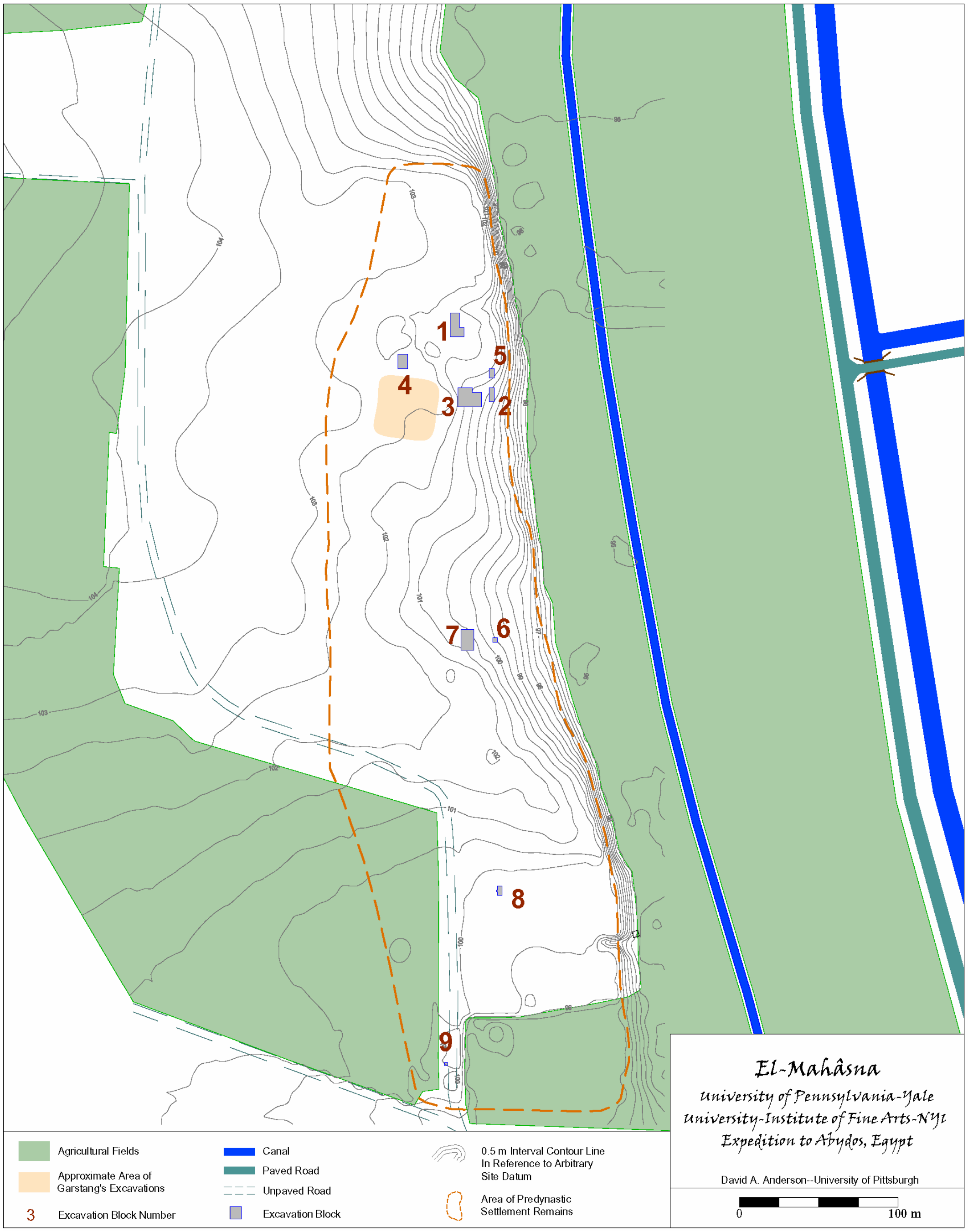

Figure 3.10: Map of el-Mahâsna showing the location of Garstang's 1900-01 excavations shown in Garstang 1903, plate IV.

Patch, following Garstang, considered the Predynastic settlement area to consist of two spatially distinct areas; Garstang's Prehistoric Settlement S1 and Prehistoric Settlement S2 (Garstang 1903: plate II). She assigned each of these areas a separate regional survey number and conducted separate surface collections, aligned to different base lines, in each site area. At site S83-40 (covering Garstang's S2), Patch collected a 10% stratified random sample from 18 transects (Patch 1991:406). At site S83-41 (Garstang's S1) a random sampling strategy was not used and all potentially diagnostic sherds were collected from the 12 transects that were established. The reason given for the departure from the random sampling strategy in this portion of the settlement remains was the overall sparse density of surface materials in this area (Patch 1991:408).

Patch's work, together with that of Garstang, revealed that the Predynastic settlement remains at el-Mahâsna date to the Naqada I-IIc-d2 periods. Patch concluded that the area of the Predynastic settlement had suffered significant impacts from both the construction of the later period tomb pits and the early excavations, and therefore might have little surviving integrity (Patch, personal communication 1995.).

3.3 EL-MAHÂSNA AND THE INTERPRETATION OF COMPETITION FOR POWER IN THE PREDYNASTIC

The interpretation of competition for power in the Predynastic from materials collected at el-Mahâsna will be conducted in light of implications derived from the models of Hassan (1988) and Kemp (1989, 2006). These models while idealized, and perhaps simplified, provide frameworks within which to evaluate evidence for either centralized control, or competition for control. According to both Hassan and Kemp, elites in the Egyptian Predynastic are engaging in activities aimed at both legitimizing and increasing their status and power. Activities include storage and accumulation of subsistence goods, redistribution of subsistence items, rituals and ceremonies linking them with a wide-spread ideology, economic activities associated with the production of funerary and luxury goods, competition, alliance building, and identification with other elites at the regional level. I propose that such activities may be seen archaeologically as follows:

- **Storage and accumulation of subsistence goods** will be seen through
    - evidence of unusually large volumes of storage facilities such as storage pits, silos, or storage vessels. Such facilities should be connected with areas of elite residence.

- **Redistribution of subsistence goods** will be seen through items such as
  - standardized vessel sizes used to measure grain or beer as known from the historic periods (Kemp 1989:174-179);
  - brewing and baking facilities capable of producing quantities which exceed the normal levels needed by individual households as determined by Geller (1992).
- **Rituals and ceremonies connecting elites with ideology and religion** will produce:
  - specialized ceramic vessels of a ritual or cultic nature (Friedman 1994:697-720);
  - "specialized" faunal assemblages related to ritual sacrifice or restricted consumption by certain individuals (Brewer 1987; Friedman 1994:688-89; McArdle 1992);
  - lithic tools identified as serving ritual functions, i.e. ripple-flake and Psš-kf knives (Friedman 1994:688; Holmes 1992; Savage 1995; Roth 1992);
  - items with elite iconography such as ceramic vessels depicting ceremonies, rituals, or other scenes of ritual significance (Finkenstaedt 1980, 1981; Garfinkel 2001; Hassan 1988, 1992), mace-heads, ceremonial regalia, and ceremonial equipment, such as figurines.
- **Production of funerary and luxury goods** will be seen through:
  - evidence of specialized craft production of luxury and funerary goods as seen through the recovery of both actual goods, and the byproducts of their manufacture;
  - production facilities such as pottery kilns for the production of funerary vessels (Hoffman 1982,1987a, 1987b);
  - long distance exchange goods.
- **Competition, alliance building, and identification with other elites at the regional level** will be seen by:
  - the recovery of items from other regions such as ceramic vessels and lithic tools produced in other regions of Egypt (Friedman 1994) or foreign locales (such as Petrie's N-ware and Palestinian wares [Friedman 1994:96-98]).

If, as Hassan has proposed, leaders were chosen based upon ideology and a communally accepted right to rule, then there should be evidence of a single elite group within a Predynastic community. Further, this group should be integrally connected with centralized storage because of its role in the management of agricultural production, storage, and intercommunity exchange of agricultural products. Therefore, patterns of elite activities recovered from the Predynastic settlement at el-Mahâsna should show a tendency toward a single, centralized locus of elite expression. This should be visible in large scale, centralized, communal storage, centralized areas of ritual and ceremonial activity, and production facilities for the large scale production of subsistence goods (breweries and bakeries) and specialized craft goods, all connected with the single focus of elite activity.

However, if competition for power and control was taking place at both the sub- and supra-community level between multiple individuals/factions as suggested by Kemp, one should observe several or all of the following patterns in the archaeological record at el-Mahâsna:

- One would see evidence of multiple loci within a single community with evidence of elite activities.
- There should not be centralized, larger scale, storage facilities, but rather several loci within the community with evidence of unusually high volumes of storage. Such facilities would suggest evidence of amassing agricultural surplus by multiple individuals/families to be utilized in feasting activities aimed at obtaining and rewarding factional supporters (Clark and Blake 1994).
- There should be evidence for public feasting in different loci seen in differential distribution of proportions of serving vessels utilized in feasting activities (Clark and Blake 1994; Feinman, Kowalewski, and Blanton 1984; Hastdorf 1993).
- Production facilities such as breweries and bakeries capable of production above subsistence levels should also occur in association with multiple elite loci, as these facilities would be utilized for feasting activities. Additionally such facilities would be utilized to feed/pay individuals engaged in production activities associated with individual elites, such as grave construction, textile production, and agricultural production as known from later historic periods (Kemp 1989).
- Savage (1995) believes there is sufficient evidence to show that elites competing for power in Predynastic society utilized different strategies. Savage provides evidence showing that some elites focused on producing ceramic and groundstone vessels for use in the mortuary cult (Savage 1995:288-289; see also Hoffman 1983), while others competed for power through trade, ritual or connections with different regions (Savage

1995 285-287, 289-292). Therefore, if competition was taking place at the intra-community level as proposed by Kemp (and Savage), then one would expect to see inter-locus variability in the types of activities or strategies being utilized by elites such as:

  - evidence of contact with different regions of Upper Egypt indicating interaction and possible factional alliance building.
  - different loci "looking" toward different external regions for economic possibilities as seen by variability in distribution of materials obtained from Nubia, Mesopotamia, or Syro-Palestine.
  - differences in craft specialization between loci.

- Since elites are consolidating their power through ritual and ideology as both Kemp and Hassan propose, items of a ritual and cultic nature should be present within each of the multiple loci. Further, if as Savage (1995: 289-293) has suggested, ritual was being utilized, manipulated and reinvented variation should be seen between loci in relative amounts of items of this nature, as well as differences in the rituals taking place in each loci.

Patterns of artifacts and activities from el-Mahâsna will be examined to determine the degree to which power was centralized in a single elite group. It is recognized that the two models being tested are ideal, simplified models of a complex process. However, by placing these models in opposition it is possible to examine to what extent complex society can be understood from the perspective of managerial benefits and to what extent from the perspective of elite competition for power. For competing elites to successfully build factions and attract supporters, they must provide benefits to their supporters. These benefits may be the distribution of non-subsistence goods. However, these benefits may be the same as those provided by elites in managerial models, i.e. the management of subsistence resources in order to overcome periodic short falls. If managerial benefits are the driving force behind the development of social complexity, then one of two possible patterns should be seen in the results from el-Mahâsna: (1) a single elite locus with evidence for centralized storage and management of subsistence goods, or (2) multiple elite loci whose primary focus is the storage and redistribution of subsistence goods. In case of the first pattern, managerial benefits may have outweighed other forms of benefits to such a magnitude that one group quickly established superiority over its rivals and maintained its position of power within the society, thus effectively eliminating competition from other rivals. In the case of the second pattern, competition between rival elite groups was taking place, but the management of subsistence goods was the primary benefit provided by competitors. Such a pattern would be interpreted as showing that managerial benefits contributed to a greater extent in the development of social complexity than did other benefits.

A third pattern may also be identified at el-Mahâsna, namely one in which there are multiple loci of elite activities each focused on providing multiple or different benefits to their supporters, with the managerial benefits being provided utilized equally or less then other benefits. Such a pattern would be interpreted as showing that the process of elite competition for power contributes to a greater extent to the development of social complexity.

4.0 METHODOLOGY

This chapter details the various field and analysis methods utilized for the present study. These were employed during field investigations and seasons of analysis which occurred over multiple seasons extending from 1995 until 2004. This chapter begins by detailing the methods and various activities which took place during the three seasons of field work. Following this discussion is a description of the methods employed in the analysis of artifacts recovered during the fieldwork.

4.1 FIELD INVESTIGATION ACTIVITIES AND METHODS

Field work was conducted during three separate seasons of activity at el-Mahâsna. Initial investigations began in the fall of 1995 as part of an overall re-examination of several Predynastic settlement sites identified by Patch during her intensive regional survey (1991). Originally, work planned at el-Mahâsna during the 1995 season was intended to include only a cursory surface reconnaissance to confirm the location of the site and to document its current condition. However, upon arriving at el-Mahâsna, it was immediately apparent that the site had recently been subjected to severe impacts resulting from recent agricultural expansion in the southern portion of the site area (southern end of Garstang's Settlement S1) and additional investigations were needed to properly assess the extent and degree of the impact (Anderson 1995). Therefore, it was decided that a systematic surface collections in the area of disturbance and limited test excavations were necessary. The methodologies employed during this effort (see Sections 4.1.1 and 4.1.2) and the results (Sections 5.1) are presented below.

In the fall of 1996, a second brief field season was conducted at the site. Investigations consisted of limited surface reconnaissance to roughly delineate the extent of Predynastic settlement remains and a topographic survey to create a detailed map of the settlement area. Additionally, the boundaries of the new agricultural fields were recorded and provided to the Supreme Council for Antiquities to assist them in their protection efforts at the site. The results of this brief season provided the first modern, detailed topographic map of the site as well as defined the boundaries of Predynastic habitation remains (Anderson 1996).

The fall 2000 field season consisted of extensive surface collection, subsurface excavation, and analysis of recovered cultural materials. Specific efforts during this season are detailed below in Sections 4.1.1.3 and 4.1.2. Using information obtained from surface collections, Predynastic settlement remains were documented over an area of approximately 7.6 ha. and extending 608 m north-south along the low desert margin and 155 m from the modern cultivation into the low desert (Anderson 1996).

In addition to the three seasons of fieldwork, several study seasons were conducted since the 2000 excavation season. During January and February 2001, limited examination of materials collected in 2000 was conducted. In the early winter and spring of 2002, additional photography and metric analysis of recovered figurines was performed. In the late fall of 2002, a more detailed study season was conducted for the purposes of examining several classes of objects from the 2000 field season, as well as provide planning information for the analysis of the extensive faunal assemblage. This assemblage was the subject of study during seasons in the spring of 2003 and fall of 2004 by project faunal specialist, Stine Rossel of Harvard University.

The remainder of this chapter will detail the specific methodologies employed for both field investigation and artifact analysis during the seasons of investigation summarized above.

4.1.1 Surface Reconnaissance/Collection Methodology

A variety of different, but compatible, surface reconnaissance/collections methodologies have been employed at el-Mahâsna over the course of the three field seasons conducted between 1995 and 2000. These methodologies were designed for different purposes, but with the intent that they be compatible with one another and not impact the results of subsequent surveys. The three methodologies are hereafter referred to by reference to the field season during which they were employed.

4.1.1.1 Surface Collection and Reconnaissance in 1995.

During the 1995 season, the primary concerns in developing the methodology for surface collection and reconnaissance were 1) to discern the distribution of materials across the area that had recently been subjected to plowing, 2) to determine if that distribution of materials spatially coincided with areas of darker soil visible in the plowed area, and 3) to record the impacts to which the site area had been subjected.

As it was not possible to re-establish the base line and transects utilized by Patch during her 1982-83 survey (see Section 3.2.3 above), a Cartesian grid was established over the southern portion of the site using a compass and 100 m tapes. This metric grid was oriented with its north-south axis (hereafter referred to as Grid North) along a bearing 30º west of magnetic north, and running roughly parallel with the edge of modern cultivation. An arbitrary grid datum was established southwest of the site area and given grid coordinates N0 E0. The location of this imaginary point was purposely established such that all grid references within the site area would be in a positive direction north and east of this point, thus avoiding any negative coordinates, or coordinate references given as S(outh) or W(est) of the datum point. This datum was not, however, physically established on the ground. This grid was then carried across the area of investigation using 100 meter fiberglass tapes and triangulation. All surface observations and collections were recorded in relation to this grid system.

Surface collections during the 1995 season consisted of fifty-five, 5 m x 5 m square collection units arranged in a series of transects placed over the area that had been subjected to agricultural plowing (Figure 4.1). The first transect extended in a grid north-south direction along the E1000 base line from N920 to N1000, and consisted of 16 collection units. A second grid north-south transect consisting of seven collection units was located along the E1045 line from N935 to N970. A single long east-west collection transect of 16 collection units was placed along the N930 east-west grid line from E980 to E1065. Finally, an "offset" east-west transect was established. This transect consisted of four collection units along the N965 line from E980 to E1000. Where the transect intersected with the original north-south transect, it was staggered five meters to the north and continued along the N970 line from E1005 to E1065 and consisted of an additional 12 collection units.

In variation to the collection methodology employed by Patch, all units within the transects were subjected to collection. From each collection unit, all artifacts (lithics, bone, organics and ceramics, diagnostic or otherwise) were collected, bagged, and labeled according to the collection unit from which they were recovered. Different material types were bagged separately with each bag receiving a tag with unique tracking number (APSP number – see Section 4.1.2.1 below) and the collection unit grid provenience recorded. Materials were then returned to the Penn-Yale-IFA Expedition house at Abydos for processing and analysis as described below (see Section 4.2)

In addition to the systematic surface collection of artifacts from the plowed area, it was also necessary to map a series of darker areas that were visible. It was thought that these areas of darker soil/sand might indicate the locations of subsurface habitation remains. These areas were most visible from atop a pile of silt recently deposited in the southwest corner of the plowed area by local farmers. Mapping of the darker areas was accomplished by having one individual stand atop the earthen mound to direct another individual around the plowed area. The individual on the ground was then able to delineate each dark area by scribing in the loose soil a line that followed the boundaries of each dark area. Once scribed on the ground, the areas could then be mapped using triangulation with 100 m tapes from fixed grid points and drawn to scale on the site map.

Using the grid and a system of triangulation, various other site features were recorded and drawn to scale on the site map. These included the locations of several piece-provenienced artifacts recovered from outside of the designated collection units, areas of agricultural plowing, and areas impacted and destroyed by the removal of low desert deposits to take advantage of the underlying silt beds. Finally, the section cuts created by this destruction were examined and visible stratigraphy and Predynastic features were recorded to scale in profile view. Unfortunately without availability of a transit/theodolite, it was not possible to record the elevation of these section drawings. However, ground surface of the section was recorded on the drawings and was subsequently tied into the arbitrary vertical site datum (see Section 4.1.1.2 below).

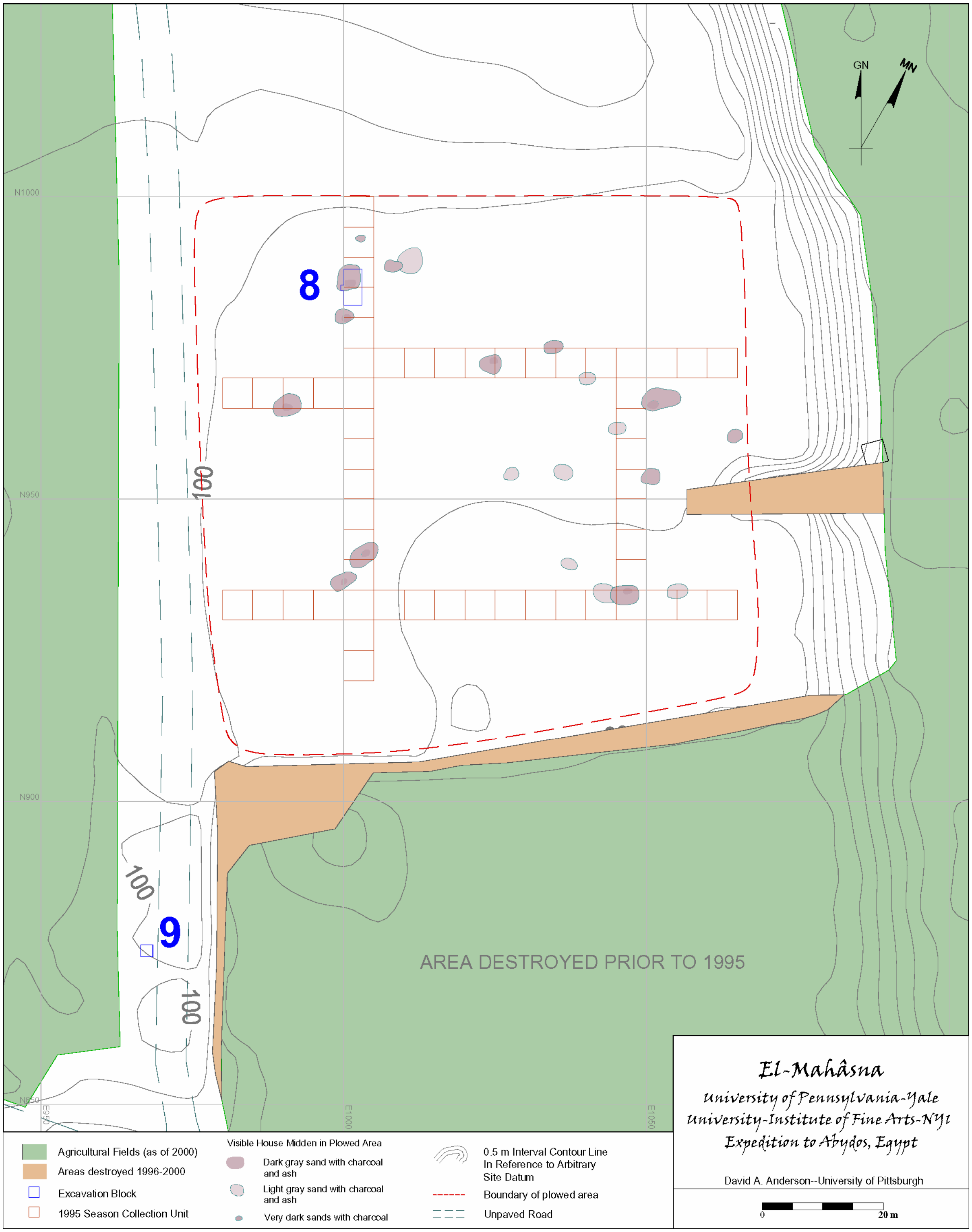

Figure 4.1: **Area of 1995 field investigations at el-Mahâsna.**

4.1.1.2 Surface Reconnaissance and Mapping in 1996

In the fall of 1996 a small team returned to el-Mahâsna for the purpose of creating a detailed, modern topographic map of the site area and conducting surface reconnaissance across the entire site area in order to delineate the extent of the surface distribution of Predynastic materials. These activities were necessary as surface collections during 1995 were limited only to the area that had been damaged by plowing in the early 1990s, and mapping was limited to that accomplished using 100 meter fiberglass tapes and triangulation.

At the end the 1995 field season, a series of 1.5 m long steel rods were driven into the ground at known grid intersections, with their tops buried 15-20 cm below the ground surface to prevent their disturbance by local village youths. With the assistance of the hand drawn map from the 1995 season, these “datum” points were relocated and exposed, and using a laser theodolite the horizontal metric grid was reestablished. As no vertical datum had been previously established for the entire site, the ground surface at N1000 E1000 was assigned an arbitrary vertical elevation of 100 m. Using the instrument, the grid was then physically extended over the entire site area and several “Stations” were established by driving one meter steel rods into the ground at known grid points. It was from these stations that the topography of the site was surveyed (Figure 4.2).

In order to create a detailed topographic map of the site area, individuals carrying optical prisms walked systematic transects across the site area, stopping to allow the surveying of points every 6-10 meters as needed based on changes in the topography. In cases of specific features, such as the drop off from the low desert to the adjacent cultivation, breaklines were recorded for the top and toe of slope to allow for better interpolation of data points. Linear and polygonal landscape features (roads, cuts, tomb depressions) were recorded as a series of sequential points along an either open or closed polygon. All data points were collected electronically using a Corvallis MC-V data collector attached to the theodolite and downloaded to a laptop computer on a daily basis.

Ultimately, over 400 individual data points were collected and used to create the first detailed topographic map of el-Mahâsna. This was accomplished by interpolating the collected points using the software package Surfer 7.0 (Golden Software 1999).

During the 1996 season a controlled surface reconnaissance of the entire site area was also conducted. The purpose of this activity was to determine the horizontal extent of the Predynastic surface remains. In order to accomplish this goal, a series of systematically spaced east-west transects were defined at 10 meter intervals north to south from the southern area of agricultural impact, to the northern edge of the wadi that was thought to delineate the northern end of the site. These transects were then walked by an individual knowledgeable in Predynastic materials, starting at the low desert edge and proceeding westward. In the case of each transect, the individual placed a pin flag along the transect at the location where Predynastic materials were last identified. The locations of these pin flags were then mapped with the theodolite, thus delineating the boundary of the zone of Predynastic habitation. It should be noted that except in a few specific instances, no materials were collected from the surface during the walking of these reconnaissance transects. In the limited number of cases where items of note were identified, these were assigned a unique point provenience number and APSP number, collected and bagged, and marked in the field with a different colored pin flag from that used for delineating horizontal distribution. The locations of these point provenienced artifacts were then recorded using the theodolite and added to the electronic site map. In all, only six objects were collected in this manner during the 1996 season.

Figure 4.2: Creating the topographic map of el-Mahâsna in 1996.

4.1.1.3 Surface Collections in 2000

The surface collection methodology developed for the 2000 field season was designed to obtain data on the distribution of various artifact classes and densities across the entire area of Predynastic settlement remains at el-Mahâsna and how these distributions might relate to subsurface architectural remains. Two concerns were primary in designing the system of collection: (1) that the system be comprehensive with a tight enough spatial interval to be likely to not miss individual household areas, and (2) be expeditious and time effective, while not degrading the nature of the data collected.

The systematic spacing interval for surface collection units in 2000 was determined based on the results of the 1995 investigations at el-Mahâsna (Anderson 1995, 1997). During these investigations, dark areas of domestic refuse and debris were noted in the area of the site which was impacted by plowing. These areas consisted of dark stains clustered in areas approximately 20 m in diameter, and were located approximately 15 m apart (Figure 4.1). Surface collections in this area were conducted as adjacent 5 x 5 m square units. Artifact density distributions from these collection units revealed that artifacts were clustered in areas of approximately 20 m in diameter and spatially correlated with the areas of dark staining. Test excavations in an area of the dark stains confirmed that these stains are associated with subsurface house remains (see Section 5.2.9 below). Therefore, from this information it appeared that the spatial extent of a typical house at el-Mahâsna was approximately 20 m in diameter and that houses were spaced approximately 15 m apart. Using this information, it was decided to place surface collections systematically across the site at 15 m interval spacing. Further, in order to make the results from the 2000 surface collection compatible with earlier collection efforts, a collection unit size of 25 m^2 was employed.

The second goal in designing the collection methodology (i.e. time efficiency) was accomplished by employing a collection strategy commonly referred to as “dog leash” collections. These collection units are circular in shape and are located and delineated in the field by means of surveying the center point of the circle, placing a stake at this location, and then scribing a circle around the point by tying a rope or “leash” of a length equal to the radius of the designated circle size being used to the stake and walking around the stake like a dog on a leash. Once delineated, all the materials within the circle may then be quickly collected from the surface. This system proved to be incredibly time efficient as only a single grid point need be surveyed as opposed to four points when using a square-shaped collection unit. Further time efficiently was accomplished by the fact that the local workmen employed during the surface collection could "lay out" a unit without assistance from the trained archaeological supervisors by using pre-made "leashes."

Thus, surface collections during the 2000 field season were accomplished by laying out a series of 25 m^2 circular collection units systematically spaced at 15 m intervals across the site area as determined during the 1996 season. The center points of each collection unit were then recorded using the theodolite. In a very few, limited cases, the placement of a particular collection unit was slightly adjusted to avoid a modern obstruction such as an animal pen fence or cane pile that could not be moved due to the potential presence of venomous snakes. In total, 240 collection units were collected during the 2000 season, amounting to a total of 7.5% of the site area having been subjected to controlled surface collection during this effort. In combination with the collections conducted in 1995, a total of 9.2% of the site area has been surface collected.

Once established, each collection unit was subjected to complete collection of all cultural and potentially cultural materials visible on the surface. In all cases, the surface collection units presented 100% surface visibility. Surface collections were given an Operation designation consisting of "SC-" followed by their grid coordinates, e.g. SC-N1000 E1000, and a Locus designation of Locus 0 (see Section 4.1.2 below for a discussion of the OP/Locus/Lot system). Collected materials were divided according to predefined artifact categories (see Section 4.1.2.1 below), with each category from each collection unit being assigned one or more unique tracking numbers (MAP #).

In a limited number of cases, items of note were identified outside of defined collection units. In such cases, the item was given a point-provenience designation (PP-#), assigned a MAP number, and then recorded relative to its three-dimensional location within the site area.

4.1.2 Excavation Methodology

Excavation methods utilized by the el-Mahâsna Archaeological Project are a modified version of those employed by other individual projects operating under the auspices of the University of Pennsylvania-Yale University-Institute of Fine Arts, New York University Expedition to Abydos (Penn-Yale-IFA Expedition) co-directed by Drs David O'Connor and William Kelly Simpson (cf. M. Adams 2005:103-108; Harvey 1998:146-149; Wegner 2002: 41-44). This system is based on the concepts of operations, loci, and lots. Traditionally, the size of excavation units utilized in the Abydos area by the Penn-Yale-IFA Expedition has been 10 x 10 m square units. These excavations have primarily been conducted on sites dating to the historic period, during which time mud-brick architecture is prevalent and excavation units must be of a size to provide sufficient exposure of these remains. As the archaeological remains at el-Mahâsna are, with the exception of the Old Kingdom – First Intermediate Period intrusive tomb structures, devoid of mud-brick architecture and are more ephemeral in nature, it was necessary to modify the system.

4.1.2.1 Provenience Recording

Proveniences at el-Mahâsna were recorded using a version of what is commonly called the OP/Locus/Lot system of excavation. The smallest unit of provenience is therefore a combination of the excavation Operation, the particular locus within that operation and the specific lot of soil removed from that locus from which an artifact(s) originate(s). Individual artifacts or groups of like artifacts from these provenience units were assigned field specimen numbers called MAP numbers. These various provenience terms are defined and utilized as follows.[3]

Operation: An operation is the basic spatial unit of excavation within which the excavator works and is equivalent to terms such as excavation unit, or test unit. In the case of excavations conducted by the el-Mahâsna Archaeological Project, operations are defined as an excavation unit 3 x 3 m in size.[4] These dimensions were chosen to provide for relatively close horizontal proveniencing of recovered materials, while providing sufficient area of exposure to recognize the difference between large horizontal features and more spatially extensive stratigraphic deposits. An additional factor in the choice of operation size is the issue of "bulk slump" resulting from the unconsolidated nature of the sandy site deposits. These deposits tend

[3] Terms such as artifact, feature, and stratum are used throughout the present study in their commonly accepted archaeological meanings. See Renfrew and Bahn 1996 and Thomas 1989, among others for definitions.

[4] The size of all Operations was 3 x 3 meters with the exception of Op 3 (Excavation Block 9 – See Section 5.2.9) which was 2 x 2 meters in size and Op 46 (Excavation Block 7 – See Section 5.2.7) which was 8 x 13 meters in size.

to slump inward at a rate of approximately 10 cm horizontally for every 15 cm of vertical excavation.

Each individual 3 x 3 m unit was designated as an Operation (OP) and assigned a sequential number within the site, beginning with Operation 1 which was the first test unit excavated in 1995. Larger excavation areas, or Excavation Blocks, were created by the excavation of multiple operations positioned adjacent to each other in order to form larger horizontal exposures. However, even in larger exposures, artifacts were provenienced according to the individual 3 x 3 m operation in which they were found. The only exception to this practice is Operation 46. This operation measures 13 m x 8 m in size and was established as such in order to completely expose the remains of Garstang's 1900-01 excavation house located in the central area of the site.

As of the end of the end of the 2000 field season at el-Mahâsna, a total of 45 individual 3 x 3 m Operations have been defined and excavated/partially excavated within the Predynastic remains, amounting to a total of 405 m^2 of controlled excavation.

Locus: A locus can be defined as any spatially defined, archaeologically recognizable entity within the site. In the case of el-Mahâsna, this typically includes features and strata as typically defined in archaeology. Loci are assigned unique numbers within the site, rather than within individual operations. While a locus can be something as specific as a particular wooden post in a specific operation, they can also be much larger spatial constructs such as Locus 0 which is assigned to the surface of the entire site, and is only subdivided on the basis of the boundaries of a particular operation or surface collection unit. In cases where a locus number is assigned to a larger spatial entity or stratum, it is usually referred to in combination with the operation number in which it is present, i.e. OP 5 Locus 44; a stratum of Predynastic habitation debris. In instances where a locus number has been assigned to a spatially limited, specific entity, the Locus number is usually referred to without reference to the operation within which it is found, i.e. Locus 69; a pot that was found broken in place in OP 30.

As of the end of the 2000 field season at el-Mahâsna, three loci have been defined which cover very large horizontal areas, with the horizontal extent of two of them being limited only by the boundaries of the site. These are Locus 0, Locus 1, and Locus 2. Locus 0 was assigned to the surface of the site and was used to record the origin of any materials recovered that were resting upon the ground surface. Locus 2 is the second locus whose boundaries equal that of the site. It was assigned to initial 5 cm +/- of "natural" deposits beginning at the surface. By "natural" it is meant the initial material beginning at surface level that has not been subjected to agricultural plowing as in the case of Locus 1, or the result of recent dumping of alluvial materials in the southwestern portion of the site (Locus 10). Locus 1 is defined as the plow zone created by the agricultural plowing in the southern most portion the site investigated in 1995 (see Sections 3.1 and 5.2.9). A total of 115 loci were defined and assigned as of the end of the 2000 field season. A complete list of defined loci can be found in Appendix A.

Lot: A Lot can be described as any defined volume of soil with three-dimensional boundaries. Lot numbers are assigned sequentially within a specific Locus, within a particular Operation. In the case of el-Mahâsna, lot designations are typically used to refer to a specific vertical subdivision of a locus; for instance, Lot 1 might be assigned to the first arbitrary 10 cm level excavated from Locus 44 in OP 5, or it might represent one of many discernable lenses or internal strata comprising a larger feature such as deposits that accumulated on a floor/living surface. However, lot designations can also be used to subdivide a horizontal space within which the excavator wanted more horizontal provenience control such as defining Lot 1 of Locus 44 in OP 5 as a 10 cm arbitrary level removed from the northwestern most 1 x 1 m square area of stratum Locus 44 in Operation 5. In another instance, a lot subdivision of a locus might refer to the western half of a pit feature that was excavated first in order to provide a cross-section profile of the pit. In all cases, lot numbers are assigned to very specific, definable volumes of soil that were excavated.

MAP Numbers: In order to track the provenience of all recovered artifacts and ecofacts, a system of field specimen numbers was utilized. Referred to as MAP numbers, these consisted of a sequential number assigned to a single object, or group of like objects, from the same archaeological provenience, i.e. OP/Locus/Lot. This number was then attached to the bag/basket containing the particular group of objects in the field. These artifact tags in addition to containing the MAP number also contained information about the specific provenience as well as indicated the artifact category, i.e. ceramic, faunal, lithics, etc. This information was also noted on daily tracking sheets for later cross-verification at the expedition lab. Once received at the lab, the tags were checked against the tracking sheets and the information was entered into a relational database for integration with later analysis.

In instances where MAP numbers were assigned to groups of similar items and it was necessary to record details of individual specimens, this was accomplished through assigning three digit, decimal suffixes to the original MAP number (i.e. MAP2460.001 and MAP 2460.002). In cases where fragments from different MAP numbers conjoined to form a single object, the object is then referred to using either a combination of the two or more MAP numbers (MAP 2913/2944-a stone mace head) or by reference to only the lower of the MAP numbers (MAP 2913 in the previous example). In instance where the conjoining fragments were from the same original MAP number, no change was made, except to assign a decimal suffix if there were more than the conjoining fragments present within the group of objects.[5]

4.1.2.2 Method of Excavation Excavation of a particular operation began with the removal of the deflated natural surface materials (Locus 2) as a single lot down to a level at which the distinct darker, silt, charcoal, and ash enriched sands of the Predynastic habitation remains were encountered; typically not more than 15 cm below existing ground surface. Once exposed, the Predynastic habitation material was assigned a new locus number within each excavation block. Excavation then proceeded by the removal of arbitrary vertical(/horizontal) lots within distinguishable stratigraphic units. While lots occasionally were removed in thicknesses of up to 25 cm, they typically were not more than 5-10 cm thick. Unfortunately, due to the nature of the deposits at el-Mahâsna, it was sometimes not possible to identify a stratigraphic break, until having excavated one, or several lots into the underlying strata. Therefore, in some cases, the final lot or two from one locus may in fact belong with the underlying locus. In such cases, the lot numbers retain their original locus designation, but have been later assigned to the appropriate habitation phase (see Section 5.0) based on elevation and observations recorded during excavation. If, during excavation of a particular lot, a potential "feature plane" was identified, the excavation of the lot was terminated at the elevation of the

[5] An exception to this reference system will be the use of ceramic figurine corpus numbers to refer to anthropomorphic figurines recovered from the site (see Section 6.4.1). These numbers are those which will be used in the forthcoming volume, *Early Anthropomorphic Figurines from Egypt* by Peter J. Ucko and Barbara Adams, with contributions by David Anderson, Beatrix Midant-Reynes, Ulrich Hartung and Wilhelm van Haarlem.

features. Vertical control was maintained during excavation by recording the opening and closing elevations of each lot in all four corners as well as the center point of the horizontal extent of the lot within each operation. All vertical measurements were recorded relative to the arbitrary site vertical datum using either the total station or builders level and stadia rod.

Excavations were conducted by trained Egyptian workmen supervised by an Egyptian foreman and trained American archaeologists. Deposits were removed using trowels, brushes and *tureyah*, a traditional Egyptian agricultural tool similar to a short-handled hoe. All removed materials were placed in buckets and carried to specified screening stations that were assigned to each unique lot being excavated. All excavated deposits were 100% dry screened through 4 mm hardware mesh and all cultural materials were retained and bagged according to predefined categories of artifacts/ecofacts and assigned a unique tracking number referred to as a el-Mahâsna Archaeological Project (MAP) Number.

4.2 ARTIFACT ANALYSIS METHODS

Excavations at el-Mahâsna generated a considerable quantity of artifacts in a variety of categories. For the purpose of the present study, not all categories of objects have been subjected to detailed analysis. Analysis efforts were focused on those categories which could most directly address the research questions and hypothetical patterns of elite activity presented above (Section 3.3). With the exception of flaked stone artifacts (both debitage and tool fragments), and botanical remains, each category received at least a basic level of analysis and description. Unfortunately, it was not possible to analyze the extensive lithic artifact and paleobotanical assemblages due to time and financial constraints.

Categories of objects recovered from el-Mahâsna were defined primarily based upon the material from which an artifact was made. However, in some cases, artifact categories were also based on functional/descriptive criteria, rather than on material type. In either case, these categories are the same or similar to those traditionally employed by archaeologists working in Egypt and elsewhere. The remainder of this chapter details the analysis methodologies employed in analyzing the ceramic and faunal assemblages. These sections do not discuss the actual nature of the individual assemblages nor the results of the analysis which are presented below in Chapter 6.0 .

4.2.1 Ceramics

With perhaps the exception of flaked stone debitage and tool fragments, ceramics make up the largest single category of artifacts recovered from the Predynastic settlement at el-Mahâsna. This category includes the numerous sherds as well as whole and nearly whole vessels recovered. Other items manufactured of ceramic such as beads, modified sherds such as spindle whorls, and clay figurines, etc., are not included in this category.

The system of ceramic analysis utilized in the study of sherds and vessels from el-Mahâsna was developed in order to address specific issues related to the research questions posed above in Sections 1.1 and 3.3. Specifically the system of analysis needed to: (1) characterize the nature of the "native" Abydos-area Predynastic ceramic assemblage relative to fabric and temper composition; (2) identify wares originating from other areas/regions of Egypt (Friedman 1994; Adams and Friedman 1992); (3) allow for the identification of foreign, i.e. non-Egyptian, wares; (4) identify potential luxury or "fine" wares; (5) allow for comparison with other recently analyzed ceramic assemblages from other Predynastic period settlements and cemeteries (Friedman 1994; Buchez 2002, 2004; Patch 1991; Vermeersch *et al.* 2004; among others); (6) allow for chronological assignations where possible (Hendrickx 1989, 1996; Kaiser 1957; Kemp 1982; Patch 1991); and (7) allow for easy comparison with earlier studies of Predynastic ceramics, namely Petrie (1901, 1902, 1920, 1921, 1953; Petrie and Quibell 1896) and others (Aryton and Loat 1911; Brunton 1927, 1937, 1948; Brunton and Caton-Thompson 1928, Mond and Myers 1937). In addition to allowing for all these needs, the system needed to be such that it provided for the quick recording of multiple attributes for each recovered sherd in an assemblage that would be greater than 100,000 individual specimens. In order to accomplish these goals, I chose to use a modified version of those systems used by ceramicists working at Hierakonpolis (Friedman 1994; Hoffman and Berger 1982), Tell el-Fara'in (Buto) and Abydos Settlement Site (Köhler 1993, personal communication 1995) as I understood them at the time of analysis. This system of analysis and documentation is described and discussed below.

4.2.1.1 System of Ceramic Analysis

The system of ceramic analysis employed in analyzing the ceramics collected during the 1995, 1996 and 2000 field seasons at el-Mahâsna consisted of recording seven individual attributes for each sherd/vessel. Analysis was performed by grouping sherds matching in all seven attributes and then assigning a seven "digit" alpha-numeric code and recording the number of rim, body and base sherds present of that particular grouping. Each "digit" of the code represented one of seven individual analysis attributes or variables being recorded, with the position within the alphanumeric sequence indicating the variable being recorded. So, a group of sherds assigned a code of B21425B were all Black-topped red ware with a vessel wall thickness between 0.5 and 1.5 cm, made of Nile Silt clays, highly burnished, red slipped surface with no temper and a pot mark present. A complete list of the individual code possibilities for each attribute and their associated values can be seen in Table 4.1. The following is a discussion of the seven recorded attributes, presented according to their order within the alpha-numeric code

"Petrie-Class": While originally intended only as a way to assign one of the traditional Predynastic period ware classes as defined by Petrie, i.e. R-ware, D-ware, etc (1901, 1920, 1921, 1953; Petrie and Quibell 1896) this variable also was used to quickly assign sherds to other relevant categories/types/periods such as Meydum bowls, Coptic period wares, or Old Kingdom period Beer Jar fragments. In this way, it was possible to quickly exclude non-Predynastic period ceramics from later analyses. A single letter was used to represent each of the traditional Predynastic period wares as well as these additional categories.

The various classes of pottery as defined by Petrie and used herein include his B-, P-, C-, D-, R-, W-, N-, and L-wares. These wares are described by Petrie in his various publications (1901, 1921; Petrie and Quibell 1896) and have been discussed by others over the years.[6] I refer the reader to these publications for a detailed description of the definition of these classes. However, I must note here that I have chosen to use Petrie's R-ware or Rough-faced pottery to include all those ceramics of a more "utilitarian" or "rough" nature regardless of the temper employed in the manufacturing process, not just those of straw tempering as originally defined by Petrie and Quibell (1896: 11; see also Friedman 1994:99-100).

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[6] See Friedman (1994:99-101) for a thorough summary of the Petrie's various pottery classes as well as problems with Petrie's definitions, modifications, and his and others' uses of the system of classification.

Vessel Wall Thickness: Vessel wall thickness was recorded as a categorical variable with three possible values based on relative thickness of the sherd; 3-Fine (≤ 0.5 cm), 2-Medium (0.5 -1.5 cm), and 1-Coarse (> 1.5 cm); or 4-Indeterminent. This variable was recorded based on the thickest portion of the vessel wall as preserved.

Clay Type: This attribute records the type of clay used in the manufacture of the vessel. There has been an extensive effort to classify Egyptian clays into a series of subcategories based on origin (alluvial clay from floodplain settings and marl clays from desert settings) taken together with, primarily, the size and quantity of sand grains present within the matrix (referred to as the "Vienna System"; see Bourriau 1981; Arnold 1982; Nordstrom 1985 ; and Nordstrom and Bourriau 1993, as well as others, for a discussion of the Vienna System). Those clay types of the Vienna System most relevant to Predynastic ceramics are Nile Silt A, B1, B2, and C and Marl A1, A2, and A4 (Friedman 1994: 111-117). However, given the time (and difficulty) in distinguishing between some of the subtypes in the field it was decided to classify the clays utilized in the manufacture of ceramics from el-Mahâsna according to the larger categories of Nile Silt and Marl Clay.

Surface Finish: This attribute refers to the final surface finishing of the vessel, typically performed prior to the addition of any types of decoration. In addition to intentional finishes, this category was also used to record the surface condition of the sherd in cases where the surface was worn and the surface finish could not be determined. Types of intentional surface finishing that were most frequently identified are high grade polishing/burnishing, smoothing, and burnishing/polishing. Also identified were roughening, scrapping, and streak and pattern burnishing/polishing. For definitions and descriptions of these categories, the reader is referred to Friedman (1994:188-193), as these definitions were followed in developing the system used at el-Mahâsna.

Surface Coating: This attribute refers to intentional coatings, slips and washes, added to the surface of the vessel. Following Friedman, the difference between slips and washes was based on thickness and opacity, with slips being those coatings that "effectively hide the underlying surface and create a smooth texture" to the sherd (1994:178). As with the previous category, sherds were recorded as "worn" when it was not possible to determine the nature of the surface coating due to post-depositional effects on the sherd. The types of surface coating most frequently recorded included Red slip, an absence of coating, and Black and Red slip. A complete list of Surface Coatings can be found in Table 4.1. Again, the reader is referred to Friedman (1994:178-188), for definitions and descriptions of the surface coatings as these definitions were followed in developing the system used at el-Mahâsna.

Temper: As used in this study, the term "temper" refers to non-plastic materials which were intentionally added to the clay in order to modify its working attributes (Rice 1987: 406-412). This attribute variable was also used to record the absence of temper as well as specific tempering materials or combinations of materials. In recording this attribute in the field, an attempt was made to distinguish intentional temper materials from those of accidental inclusion or materials naturally occurring as inclusions in the clay source. Fabric/temper classes were defined based on the combination of clay type and temper material (Friedman 1994: 127-132). Great attention was paid to the definition of temper types, as this variable was shown to be significant in defining regional wares important in examining extra-regional interaction (Friedman 1994).

Decoration: Decoration was the final attribute recorded during analysis and refers to intentional decoration of the vessel which is separate and different from both Surface Finish and Surface Coatings. This includes such techniques as painting, as well as modifications to the body of the ceramic such as incisions, punctuations, or impressions. I have also chosen to include in this category other modifications to the surface of a vessel that are both post manufacture, such as pot marks, drill holes, as well as the result of the manufacturing process, such as wheel turning marks on sherds from later periods.

4.2.1.2 Rim/Base Analysis

In addition to the seven fabric/ware attributes recorded, a sample of rim and base sherds from each provenience, where feasible, were subjected to further metric analysis to record information concerning vessel form and size. Attributes recorded included the profile of the vessel wall as seen in cross section, the percentage of the original base/orifice circumference preserved, and the base/orifice diameter of the original vessel.

Vessel wall profiles were recorded using two different methods of drawing. During the 1995 and 2000 seasons, rim/base profiles were draw by hand using calipers, carpenter's molding combs and graph paper. This was accomplished by first determining the "stance" of the sherd by using a flat surface placed perpendicular the sheet of paper. The rough outline of the sherd was then traced using a fine lead mechanical pencil. Using the carpenter's comb, the detailed shape of the cross section was then obtained and the drawing modified to reflect this more detailed and precise information. While this method proved to be accurate it was necessary to develop a more time efficient method for drawing and recording the vessel wall profiles.

Recording rim/base profiles during the 2002 study season was accomplished through the use of a flat bed scanner, modified to provide a stable, vertical surface against which to determine proper sherd "stance." Once the sherd was properly positioned such that the break was parallel to the glass scanning surface and the sherd was aligned to its proper stance, a high resolution scan (300 dpi) was made of the cross section. Vessel cross sections were then drawn from the resulting scans using AutoCAD software back in the United States. This method proved to be not only very accurate in recording detail, but also capable of recording twice as many sherds in the same period of time as the former method.

Diameters of the orifice/base of the vessel were recorded using a diameter template with half-centimeter gradations and divided into 5% circumference intervals as described in Rice (1987:222-223, fig. 7.9). Rim sherds with less than 5% of the orifice circumference and bases with less that 10% of the orifice circumference preserved, while recorded, were considered to be unreliable for diameter measurements and subject to interpretation regarding the proper stance as determined by either method.

4.2.1.3 Vessel Form and Function

Using the information on the shapes of the rim profiles obtained through the rim/base analysis, the reconstructed form of vessels represented by the sherd assemblage was determined using a system of subjective shape classes as defined by Friedman (1994:221-228). This analysis was only conducted using the rim sherds and complete/nearly complete vessels recovered. Base sherds were not used as these are less diagnostic of the overall form of the vessel. The classification of vessel shape followed the breakdown developed by Friedman (1994: tables 6.1a and 6.1b) with a few modifications. These modifications are indicated in Table 4.2 by bold, italic text, and included: (1) increasing the orifice diameter of Miniature Bowls (subjective shape 1m) from ≤ 8 cm to ≤ 10 cm; (2) adding the subjective shape variations of 1n1 and 2n1 which vary from the original subjective shape class of Friedman (1n and 2n) by having body thickness criteria of ≥ 0.5 cm and < 1.5 cm, rather than solely ≥ 1.5cm; and finally, (3) adding of subjective shape class 1p to the possible subjective shapes for open vessel forms. Subjective shape class 1p was defined as an open, very shallow-to-nearly flat platter with an orifice diameter greater than 20 cm.

Assigning a function to vessel forms, particular when forms have been determined from sherds, is a difficult problem that has received a great deal of attention in the archaeological and ethnoarchaeological literature (Bedaux and van der Waals 1987; Braun 1983; David and Hennig 1972; Howard 1981; Longacre 1981, 1991; and Strauss 2000). In her analysis of Predynastic ceramics from settlement contexts, Friedman (1994) examined several different avenues by which to determine the function of Predynastic vessel forms, including analogy with Dynastic forms, and an analysis of the contents of various vessel forms recovered from cemetery contexts (1994:246-254). For the purposes of this study, I have chosen to follow Friedman's broad categories of bowls, jars, bottles, basins, etc. (1994:tables 6.1a and 6.1b), where function is implied from vessel form with open vessel forms, bowls and beakers, being used more in food preparation, consumption, presentation and display, while closed forms were more suited for storage and transportation. In Table 4.2 I list the "functional categories" for each of the subjective shape classes as used in the present study.

Table 4.1: Ceramic ware analysis codes.

Petrie Ware Code	Sherd Thickness	Clay Type	Surface Finish	Surface Coating	Temper	Decoration
A Old Kingdom Wares	**1** Coarse > 1.5 cm	**1** Nile Silt	**1** Scrapped	**0** None	**1** Normal	**0** None
B Black-topped Redware	**2** Medium 0.5 - 1.5 cm	**2** Nile Marl	**2** Roughened	**1** White Slip	**2** Chaff/Straw	**1** White Paint
C White-cross lined Ware	**3** Fine < 0.5 cm	**3** Other	**3** Smoothed	**2** Red Slip	**3** Sand	**2** Red Paint
D Decorated Ware	**4** Indeterminate	**4** Not Defined	**4** High Grade Polish/Burnish	**3** Other	**4** Limestone	**3** Rippling
E Unknown	**Q** Rough Sort 2002	**Q** Rough Sort 2002	**5** Streak Burnish	**4** Brown Slip	**5** None	**4** Punctate
F Fancy	**Z** Too Small	**Z** Too Small	**6** Pattern Burnish	**5** Undistinguished but present	**6** Grog	**5** Impressed/Incised
G Glossy Red/Brown Ware			**7** Burnished while moist	**6** Black Slip	**7** Other	**6** Half Polished
I Palestinian Ware			**8** Streak polish	**7** Self Slip	**8** Poorly prepared clay	**7** Thumb Impresed
J Beer Jars			**9** Burnished/Polished	**8** Red Wash	**9** Not Defined	**8** Milled Rim
K P or B Ware Eroded			**A** Not Defined	**9** Black and Red Slip	**A** Straw	**9** Incised and Punctated
L Late Ware			**Q** Rough Sort 2002	**A** Black and Brown Slip	**B** Straw and Shale	**A** Finger Channeling
M Medum Bowls			**X** Worn	**B** Not Defined	**C** Dung	**B** Pot Mark
N Black Incised Line Ware			**Z** Too Small	**C** Not Defined	**D** Coarse Organic	**C** Rope Impressed
P Polished Redware				**Q** Rough Sort 2002	**E** Grog and Organic	**D** Wheel turning marks
R Rough Ware				**X** Worn	**F** Shale	**E** Wheel turning marks and rope impressed
Q Rough Sort 2002*				**Z** Too Small	**G** Calcium Carbonate	**F** Drilled
S Bread molds					**H** Nile Silt	**G** Appliqué
T Islamic Period Ware					**J** Marl Clay and Limestone	**H** 1995 Not Recorded**
V Coptic Period Ware					**K** Chaff/Straw and Sand	**Q** Rough Sort 2002
W Wavy Handle Wares					**M** Not Defined	**Z** Too Small
X Later Period Ware					**Q** Rough Sort 2002	
Z Too Small for Analysis					**Z** Too Small	

Notes:

* Q' was used to indicate those sherds that were subjected only to rough sorting during the 2002 study season, and were not fully analyzed.

** Decoration was not specifically recorded as a separate attribute code in the analysis of ceramics during the 1995 season.

Table 4.2: Subjective shape classes and functional categories used in vessel form and function analysis.

Subjective Shape Code	Shape Description	Basic Form Category	Functional Category
	Open Forms		
1a	Bowls with convex contour, direct rim	Bowl	Food Preparation
1a1	Shallow to medium depth	Shallow Bowl	Food Serving
1a2	Deep bowls	Deep Bowl	Food Preparation/Serving
1b	Bowls with sloping contour, direct rim	Bowl	Food Preparation
1b1	Bowls with straight sloping walls	Bowl	Food Preparation
1b2	Shallow bowls with straight sloping walls	Shallow Bowl	Food Serving
1b3	Bowls with slight curvature in wall	Bowl	Food Preparation
1b4	Deep bowls, slight curvature in wall	Deep Bowl	Food Preparation/Serving
1b5	Bowls with elliptical orifice	Bowl	Food Preparation
1c	Beakers with direct rim	Beaker [a]	Food Preparation [b]
1c1	Beakers with vertical (90°) walls, direct rim	Beaker	Food Preparation
1c2	Beakers with near vertical (100°) walls, direct rim	Beaker	Food Preparation
1d	Beakers with everted rim	Beaker	Food Preparation
1d1	Beaker with vertical wall, slightly evened rim	Beaker	Food Preparation
1d2	Beaker with vertical wall, strongly everted rim	Beaker	Food Preparation
1d3	Beaker with near vertical wall, slightly everted rim	Beaker	Food Preparation
1d4	Beaker with near vertical wall, strongly everted rim	Beaker	Food Preparation
1e	Bowls with composite contour	Bowl	Food Preparation
1f	Bowls with everted rims	Bowl	Food Preparation
1g	Bowls with modeled rims	Bowl	Food Preparation
1h	Bowls with ledge rims	Bowl	Food Preparation
1j	Bowls with broad ledge or everted rims and convex body contour	Bowl	Food Preparation

Subjective Shape Code	Shape Description	Basic Form Category	Functional Category
1j1	Deep Bowls with broad ledge or everted rims	Deep Bowl	Food Preparation/Serving
1j2	Shallow Bowls with broad ledge or everted rims	Shallow Bowl	Food Serving
1k	Bowls with exterior carination	Bowl	Food Preparation
1l	Shallow elliptical pans	Pan	Food Preparation/Serving
1m	Miniature bowls; diameter ≤ ***10*** cm	Miniature Bowl	Eating/Drinking vessel
1n	Large basins; diameter ≥3 5 cm, body thickness ≥ 1.5 cm	Basin	Food Preparation
1n1	***Large Basins; diameter ≥ 35 cm, body thickness ≥ 0.5 and < 1.5 cm***	***Basin***	Food Preparation
1o	Crude, shallow, elliptical platters	Platter	Food Serving
1p	***Shallow, nearly flat Platters > 20 cm diameter***	***Platter***	Food Serving
	Closed Forms		
2a	Hole mouth jars, direct rims	Hole Mouth Jar	Storage/Transportation
2a1	Hole mouth jars with low sloping contour	Hole Mouth Jar	Storage/Transportation
2a2	Hole mouth jars with medium sloping contour	Hole Mouth Jar	Storage/Transportation
2a3	Hole mouth jars with high sloping contour	Hole Mouth Jar	Storage/Transportation
2a4	Hole mouth jars with convex contour, low shoulder	Hole Mouth Jar	Storage/Transportation
2a5	Hole mouth jars with convex contour, medium shoulder	Hole Mouth Jar	Storage/Transportation
2a6	Hole mouth jars with convex contour, high shoulder	Hole Mouth Jar	Storage/Transportation
2b	Jars with modeled rims	Jar	Storage/Transportation
2b1	Jars with sloping contour, low shoulder	Jar	Storage/Transportation
2b2	Jars with sloping contour, medium shoulder	Jar	Storage/Transportation
2b3	Jars with sloping contour, high shoulder	Jar	Storage/Transportation
2b4	Jars with convex contour, low shoulder	Jar	Storage/Transportation
2b5	Jars with convex contour, medium shoulder	Jar	Storage/Transportation
2b6	Jars with convex contour, high shoulder	Jar	Storage/Transportation
2c	Jars with low neck, modeled rims	Jar	Storage/Transportation

Subjective Shape Code	Shape Description	Basic Form Category	Functional Category
2d	Small jars with modeled rims or low necks: diameter ≤5 cm	Small Jar	Storage/Transportation of liquids
2e	Bottles with high evened necks	Bottle	Storage/Transportation of liquids
2f	Jars with everted rims	Jar	Storage/Transportation
2g	Jars with concave profile (low vertical neck), direct rim	Jar	Storage/Transportation
2h	Jars with collar	Jar	Storage/Transportation
2j	Small jars with everted rims; diameter ≤ 8 cm	Small Jar	Storage/Transportation of liquids
2k	Jars with ledge rim	Jar	Storage/Transportation
2m	Miniature jars; diameter ≤ 2 cm	Miniature Jar	Storage/Transportation of liquids
2n	Large jars or pithoi; diameter ≥ 35 cm, wall thickness ≥ 1.5 cm	Large Jar	Storage
2n1	***Large jars or pithoi; diameter ≥35 cm, wall thickness ≥ 0.5 and <1.5 cm***	***Large Jar***	***Storage***

Source: Adapted from Friedman 1994, tables 6.1a and 6.1b.

Note: Modifications to Friedman are indicated by bold, italic text.

[a] Beakers with a diameter ≥ 37cm were classified as a “Large Beaker”

b Beakers may also have been used for storage purposes, particularly those with large orifice diameters.

4.2.2 Faunal Remains

Based upon data obtained during the 1995 test excavations, it was know that faunal remains were well preserved at el-Mahâsna, even in those areas that had been impacted by the agricultural plowing and irrigation. Further, these preliminary results indicated that the faunal assemblage was rich in both mammal, fish, and reptile remains, and would require a specialist versed in the various species of the Nile Valley. Therefore, Stine Rossel from Harvard University was invited to analyze the faunal assemblage from the 2000 season at el-Mahâsna. The reader is referred to Rossel (2006) for a detailed discussion of the methods of analysis and identification that were used in analyzing the el-Mahâsna assemblage. Included here is only a brief discussion of the methods of recovery, cleaning, and tabulating of the faunal materials.

During both the 1995 and 2000 excavation seasons, faunal remains were recovered from excavated deposits though 100 percent dry-screening of the matrix through 4 mm wire mesh screens. Once sifted, the matrix was examined and all visible faunal materials were removed from the screen, bagged separately from other artifact classes, and assigned separate MAP numbers different from those of other artifacts from a provenience. Upon returning to the field house, the faunal materials were removed from their plastic bags and laid out in order to dry out any moisture present from the matrix in which they were recovered. Following this process, the remains were examined by the lab supervisor, and those remains determined to be too fragile to be washed were dried brushed with a soft bristle brush. All other remains were gently washed to remove any attached sediment, Finally, after washing/dry brushing all bone tools/tool fragments were removed and assigned new MAP numbers, while the remaining materials were allowed to fully dry before being counted and re-bagged to await later analysis.

Faunal materials from the 2000 season were analyzed by Rossel during the 2003 and 2004 study seasons. Unfortunately, the faunal materials recovered during the 1995 test excavations were not available at that time and have yet to be analyzed. Rossel's analysis focused upon identifying individual bones/bone fragments to the most detailed level of taxonomic classification, preferably to species level, where possible. In those cases where it was not possible to identify to the level of species, higher level classifications were used. Each specimen was then identified as to skeletal element, portion of element preserved, side of body where applicable, percent preserved, as well as age, size and sex of the individual when possible. Also recorded were various modifications, both intentional like cut marks and burning, as well as taphonomic modifications such as weathering and rodent gnawing. Finally, a count of the number of identified specimens (NISP) and weight in grams was recorded.

While an attempt was made to analyze the entire collection of faunal materials from the 2000 season, it was necessary to prioritize the collection to ensure a maximal return of information from well provenienced materials over those from more suspect contexts. Therefore, faunal remains from surface contexts, as well as potentially disturbed contexts such a those in Habitation Phase 3GAR (see Section 5.2.3), and later pits and disturbances were given lower priority and have not yet been analyzed.

Finally, it should be noted here that the Number of Identified Specimens or NISP has been used in all tabulations and analysis of the faunal materials. While some scholars choose to use Minimum Number of Individuals (MNI) or a combination of NISP/MNI when handling faunal data, we have chosen to use NISP, following Grayson (1984).

5.0 RESULTS OF FIELD INVESTIGATIONS, PART I: STRATIGRAPHY AND FEATURES

Field investigations at el-Mahâsna during the 1995 and 2000 field seasons resulted in a detailed systematic surface collection comprised of 295, 25 m^2 surface collection units (Figure 5.1), as well as the controlled hand excavation of 405 m^2 of Predynastic habitation remains. As discussed above (Section 4.1.2), excavations were spatially organized as a series of Excavation Blocks consisting of one or more adjacent 3 x 3 meter excavation Operations (or 2 x 2 meter in the case of Op 3- See Section 5.2.9). For ease of reference, each of these Excavation Blocks has been assigned a sequential number, beginning at the northern end of the site and progressing south (see Figure 5.2). This chapter begins with a discussion of the general nature of the deposits at el-Mahâsna as revealed through excavation and the methods employed to subdivide them into recognizable habitation phases within each of the excavation blocks. Next, detailed results of both the surface collections and excavations are provided. Organized according to individual excavation blocks, each of the following sections presents (a) a discussion of the proposed reconstructed habitation phases within a specific block as revealed during excavation and subsequent analysis of the field results; (b) a discussion of the features associated with each phase; and (c) chronological assignation of each of the habitation phases. Cursory discussions of the types of artifacts recovered from each block are given, however, in depth discussion of artifacts recovered from each block is reserved for Chapter 6.0

Before beginning a discussion of each Excavation Block, it is necessary to discuss the methods employed in determining the habitation phases. As described above (Section 4.1.2.1), excavations within each operation were conducted in a series of arbitrary horizontal and vertical divisions designated as Lots. The precise thickness/volume of soil removed in each Lot varied according to the specific natural/cultural stratigraphic situation. In the majority of cases, these Lots consisted of 5-10 cm of vertical depth removed from across an entire 3 m x 3 m excavation operation within discernable stratigraphy. However, in some cases, it was not possible to precisely define stratigraphic breaks due to the nature of the deposits at el-Mahâsna, and the final lot or two of one locus may in fact later prove to have been the upper lots of an underlying stratum. Or, as is more often the case, there were no discernable differences in the nature of the deposits present when in fact, a living floor was apparent based on the presence of several features, all originating on the same horizontal plane.

Following excavation, the vertical extent of every excavated Lot within every Operation was plotted in cross-section based on recorded opening and closing elevations. The vertical position of each identified feature was also plotted on the cross sections relative to its absolute elevation and known placement within each Lot, i.e. identified at the base of Locus 44, Lot 2. Once each Operation was reconstructed in cross section, adjacent cross sections were combined, creating continuous north-south and east-west profiles through each of the Excavation Blocks. Using these resulting cross sections, recorded stratigraphic breaks, and actual stratigraphic profiles where available, it was then possible to recognize distinct habitation surfaces and the deposits associated with these surfaces in each Block. Each recognizable habitation phase was then assigned a unique alphanumeric designation based on the excavation block number and an uppercase alphabetic suffix assigned sequentially from upper- to lower-most phase.[7] Exceptions to this vertical order is the use of the suffix "L" to indicate loci/lots that have origins of post-Predynastic date, such as intrusive tomb pits/shafts, and the suffix "GAR" to indicate materials believed to have originated as excavation dump from Garstang's 1900-01 excavations and *sebbakh* digging.[8] Once determined which locus/lot combinations from each Operation belonged to which habitation phase, this information was then added to the central provenience database. The resulting reconstructed phase stratigraphy is subsequently presented in the individual Excavation Block discussions.

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[7] It was decided to assign habitation phase designations in increasing order top-to-bottom, or in reverse chronological order, rather than in increasing order from oldest to most recent. This decision was made, since with the exception of Blocks 2 and 5, it is not possible to definitively determine that the earliest phase of habitation has been reached in the excavations.

[8] The "GAR" designation for a phase was only used in the case of Excavation Block 3.

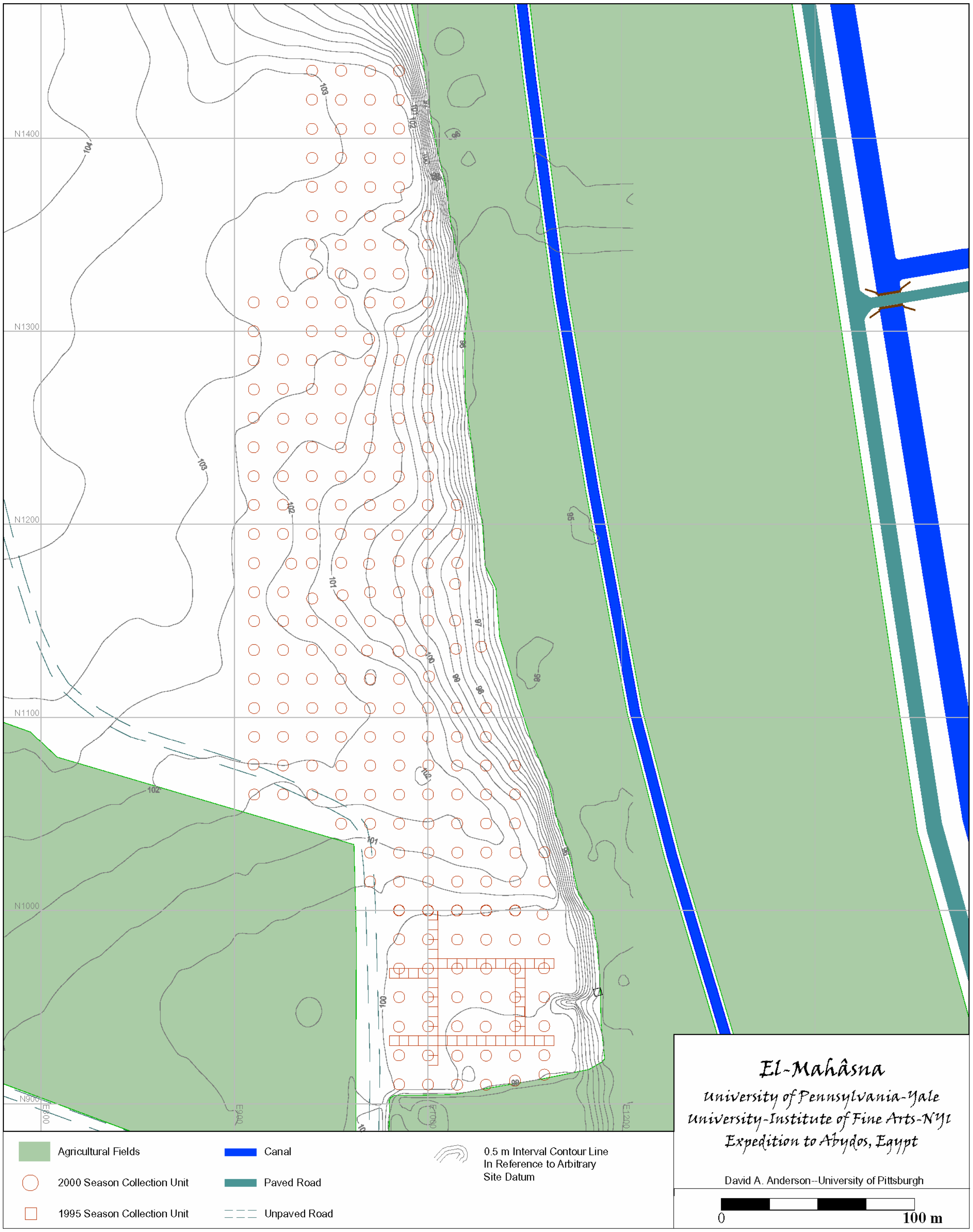

Figure 5.1: **Location of surface collections from the 1995 and 2000 field seasons at el-Mahâsna.**

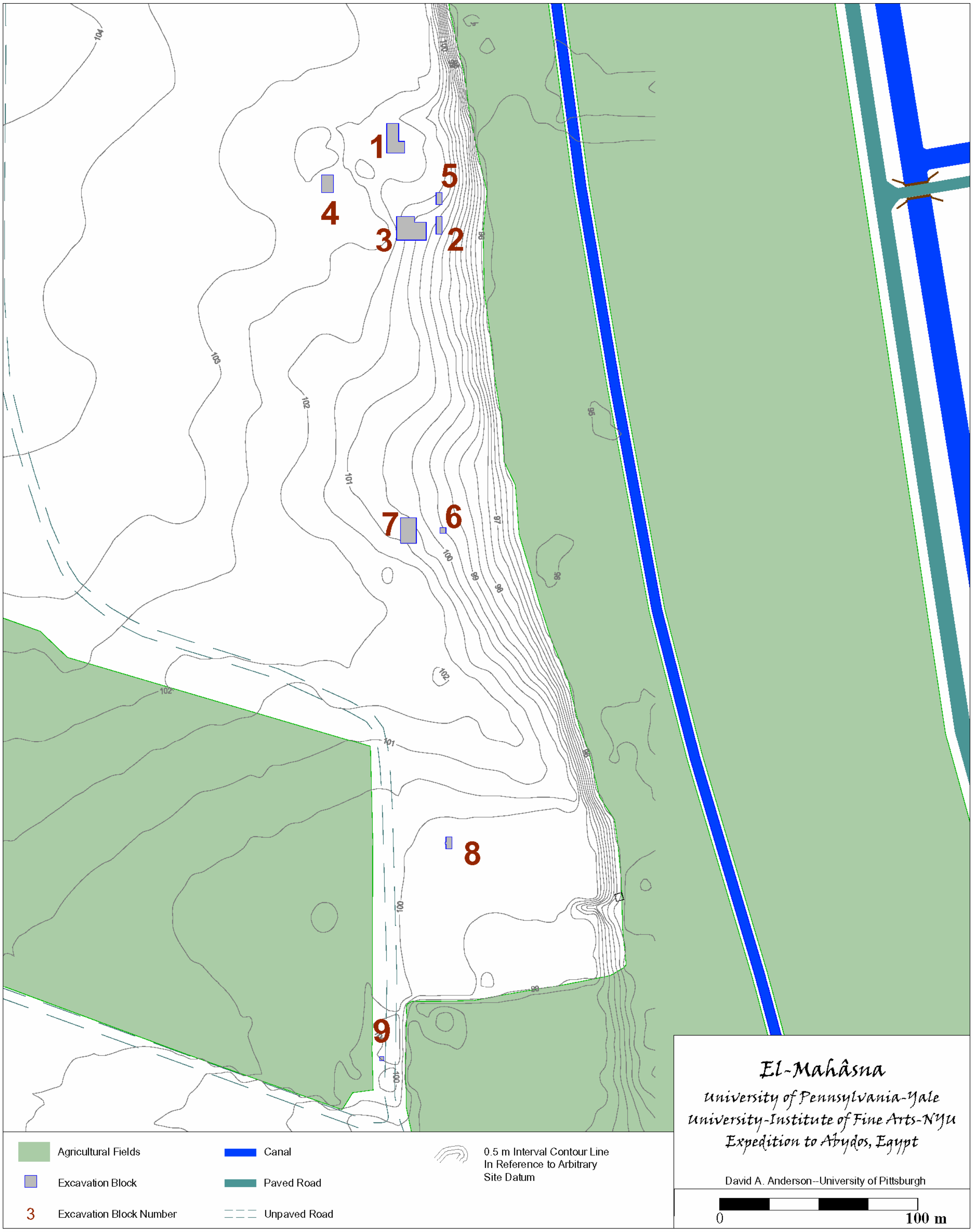

Figure 5.2: Map of el-Mahâsna showing the location and designation of the Excavation Blocks

5.1 SURFACE COLLECTION RESULTS

Artifacts recovered from the 295 surface collection units primarily included ceramic sherds and lithic debitage as well as an occasional lithic tool fragment, fragment of grinding stone, or bead. Unfortunately however, these other classes of artifacts were recovered in such minimal number as to exclude the usage in defining areas of elite occupation within the site. Therefore, only the distribution of ceramics was examined in detail, and then primarily for the purposes of identifying areas of lighter and denser habitation debris.

When one takes into account all the ceramic sherds recovered during the surface collections, the number of sherds recovered ranged from as little as zero to as many as 2,026 per collection unit. However, in many cases the recovered sherds were small (<2 cm) and highly eroded and thus could not be definitively assigned to the Predynastic period. It was important to consider only those sherds that could be reliably determined to be Predynastic as later period sherds were recovered in quantities exceeding 270 sherds per collection unit in some areas (primarily the areas with surface evidence of Old and First Intermediate Period tombs [FIP]). These later materials ranged in date from Old Kingdom through Roman and Coptic periods, although were mostly either Old Kingdom/FIP or Roman. Because of the presence of these later materials only Predynastic period sherds where ultimately used in the creation of surface density maps that were used in selection of areas to conduct subsurface excavations.

Predynastic sherd densities recovered from the 295 collection units ranged from zero to 286 sherds per unit, or just over 11 sherds/m^2, and an average of 20.3 sherds/unit. Using interpolation software, a surface density map was created from the collection unit data (Figure 5.3). The resulting map, reveals that an extremely dense concentration of surface sherds in the northern portion of the site. This concentration is primarily the result of four collection units which all produced in excess of 200 sherds. Further, these high counts may partially be the result of surface disturbances caused by *sebbakh* digging as well as dump materials from Garstang's excavations. However, as we will see below, these high counts also appear to reflect the nature of Predynastic use of this area.

In addition to this primary concentration, several other areas of higher sherd densities were identified. The first of these is located just west of Excavation Blocks 4 along the western boundary of the limits of Predynastic remains as identified from surface reconnaissance in 1996.

The next most dense clustering of surface material can be seen as a roughly linear concentration running northeast–southwest away from the main cluster surrounding Excavation Block 3. Nearly as dense as this linear cluster is a concentration of material located approximately three-quarters of the way between Excavation Blocks 3 and 6/7. Finally, the remaining higher density area identified through the surface collections is the area surrounding Excavation Block 8 at the southern end of the site in the area that was impacted by agricultural plowing in the early 1990s.

5.1.1 Positioning of the Excavation Blocks

Using the patterns of surface density obtained from the surface collection units, the locations for subsurface excavation were chosen, with the exception of Blocks 8 and 9. These excavation areas were specifically positioned to evaluate the degree of impact caused by the illegal creation of the agricultural fields in the early 1990s. Block 8 was positioned based upon the results of the 1995 surface collections and mapping of the darker midden areas visible in the plowed zone as discussed above in Section 4.1.1.1. Block 9 was excavated to determine the impacts to the site in those areas actively under cultivation in 1995 and its location was partially decided based upon several hearth features visible in the nearby section cut located just to the east of block.

Following the completion of the 2000 season surface collections, the locations for Blocks 1-5 were chosen. These blocks were positioned in order to investigate the very dense concentration of surface materials at the northern end of the site. Originally, it was intended that these blocks would only consist of a few 3 x 3 meter operations each, and then several excavators would shift their activities to other areas of surface concentration just discussed, while one or two very promising blocks at the northern end would be expanded by one or two staff members. Unfortunately, concerns of the security detail that accompanied us each day prohibited us from working in multiple areas of the site at any one time because of issues of visibility and lack of availability of additional guards. Therefore, we were restricted to working on a single area of the site until all members of the staff could move to another area. Therefore, because of the complex nature of Block 3 and the degree of material uncovered there and in Block 1, these areas occupied our efforts until nearly the end of the excavation season at which time we were briefly able to excavate in Blocks 6 and 7.

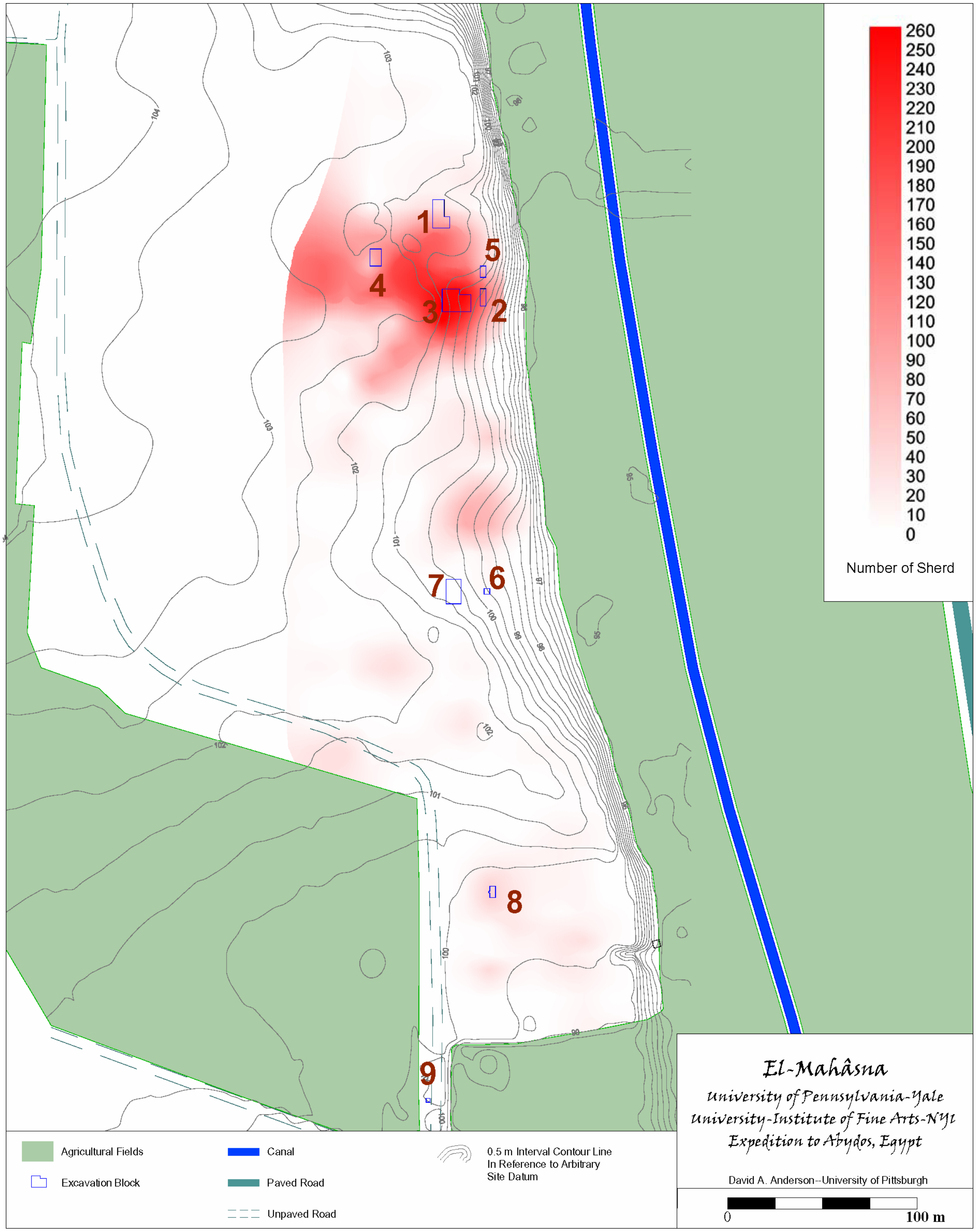

Figure 5.3: Density of Predynastic period ceramic sherds recovered from the surface.

The location of Block 6 was chosen to investigate an area with very low concentrations of surface ceramics while at the same time having a dense cluster of fine flint blades visible on the surface. As will be discussed below in Section 5.2.6, this concentration proved to be the result of Garstang discarding materials excavated elsewhere and not the result of Predynastic activities. Block 7 was subsequently positioned to investigate a large mud brick structure visible on the surface that based on the results of Block 6 and a close examination of Garstang's map appeared to represent the remains of his 1900-01 expedition house. These excavations were important for correlating his map with the modern landscape and thus determine where his areas of excavation were located (see Section 5.2.7).

The criteria used in choosing the location of the excavation blocks is discussed more specifically below in the detailed discussion of each excavation block.

5.2 EXCAVATION RESULTS

5.2.1 Excavation Block 1

Excavation Block 1 is located toward the northern end Predynastic settlement and consists of 12 contiguous 3 x 3 meter Operations, OPs 4, 5, 6, 7, 8, 9, 26, 29, 30, 31, 42, and 43 (Figure 5.2). The modern ground surface in the area surrounding Block 1 is characterized by relatively level, compact sands and gravels with a slightly darker appearance than the surrounding area (Figure 5.4). Just to the north of this Excavation Block is a shallow, linear depression running roughly east-west. This area of Block 1 was chosen for excavation based on the concentration of artifacts recovered during the controlled surface collections and because the darker nature of the surrounding ground surface appeared to indicate the existence of subsurface habitation remains.

Figure 5.4: **Area of Excavation Block 1 prior to excavation.**

Excavations within Block 1 resulted in the removal, on average, of 45 cm of vertical deposition from Predynastic period habitation. Analysis of the excavations in Block 1 have resulted in the identification of three primary Predynastic period habitation phases (Figure 5.5) containing several pyrotechnic features (i.e. hearths/ash pits) and living floor remains, in addition to the well preserved remains of numerous wooden and reed posts that appear to constitute a portion of one or more former structures. Besides the Predynastic period remains, several later period intrusive loci were also identified and will be briefly described below.

As excavations within Block 1 were some of the first conducted during the 2000 field season, the first two operations in the block (OPs 4 and 6) were considered to be somewhat exploratory. Consequently, the locus designation Locus 2, normally reserved for only the upper 5-10 cm of natural desert surface, was used to refer to all the Predynastic period deposits excavated within these operations until Locus 64 and Locus 65 were encountered near the base of the excavations. Nevertheless, it has been possible to successfully and reliably subdivide these deposits into Habitation Phases in these operations based on the individual Lots that were excavated.

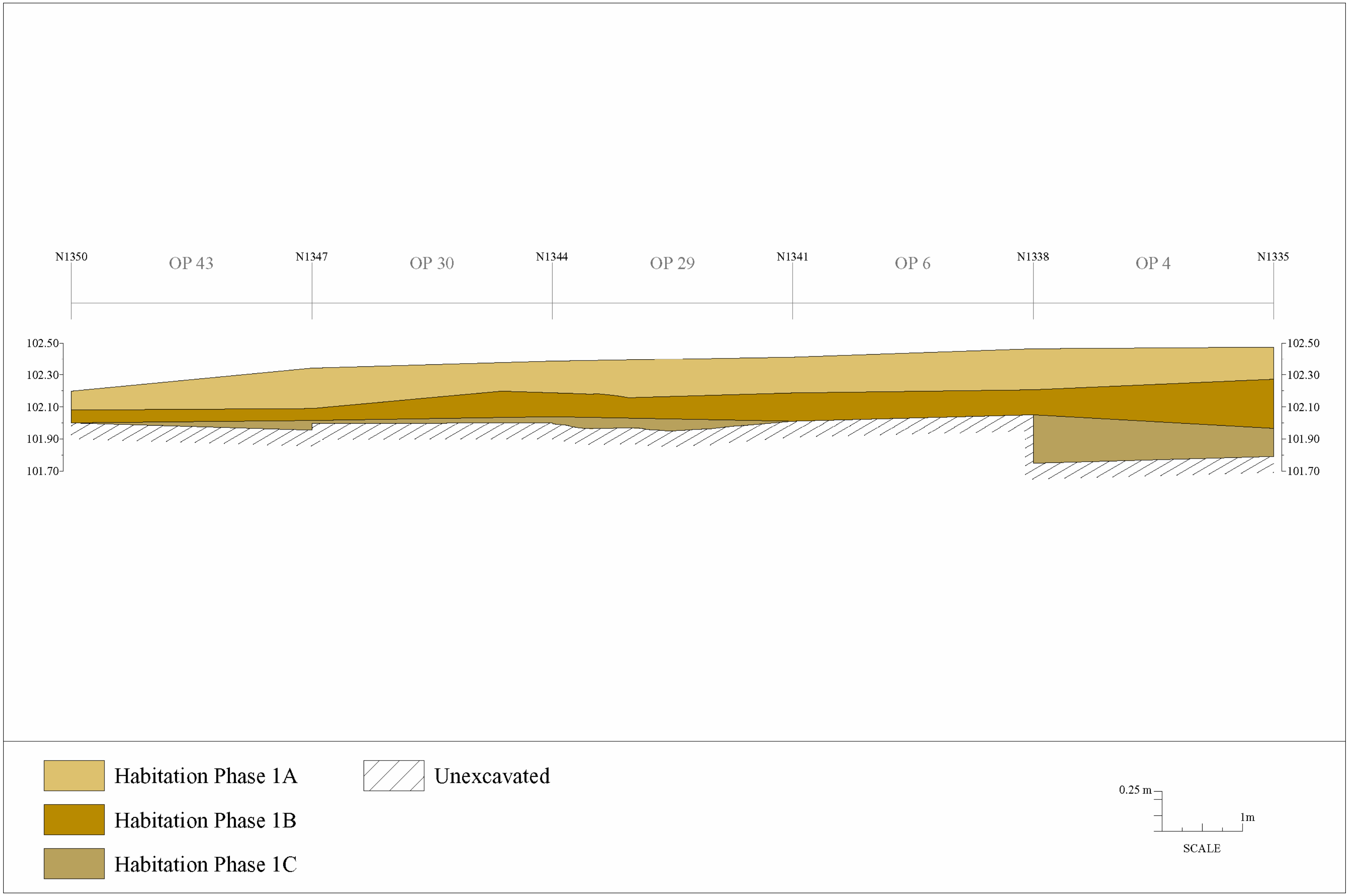

Figure 5.5: Reconstructed north-south profile looking east thorugh Block 1 showing habitation phases.

Categories of some of the artifacts recovered from Block 1 include ceramic sherds, lithic debitage and tool fragments, faunal remains, bone tools, beads, copper tools, figurine fragments, ostrich eggshell, ground stone, and wood.

5.2.1.1 Habitation Phase 1A

Habitation Phase 1A is the uppermost phase identified in Block 1 and encompasses both Locus 2, the natural desert surface materials, as well as the upper portions of Locus 44. Locus 44 is a stratum of dark, organic-rich, fine sands and silts resulting from Predynastic habitation debris and midden deposits which have accumulated within and around a post structure. The boundary between Phase 1A and the underlying Phase 1B has been determined based upon the vertical co-occurrence of several features and living surface areas present within the block, as well as correlation with stratigraphic breaks visible in three stratigraphic profiles which were fortunate to hold up long enough to record their details. Averaging 23 cm in thickness, Habitation Phase 1A deposits ranged in thickness from as few as 12 cm in the northern end of the block to as much as 30 cm in the eastern portion of Operation 9. This observed variation in the thickness of the Phase 1A midden deposits is most likely associated with the 28 cm drop in surface elevation from the southern to the northern end of Block.

Features: A number of features associated with Phase 1A were identified, including a post structure, living floors/surfaces and ash pits/hearths (Figure 5.6).

Structural Remains –Posts and Living Surfaces: Perhaps the most significant feature associated with Habitation Phase 1A is a structure comprised of posts and associated living floor deposits. While most likely originally constructed as part of Habitation Phase 1B, the structure appears to have been used and modified during Phase 1A. A total of at least 58 wooden and reed posts were identified during the excavation of Block 1 and appear to be associated with the Phase 1A usage of the structure.[9] While details were not recorded in the field for six of the posts, details regarding the material and the diameter of the posts was recorded for the remaining 52

[9] The remains of several other possible posts were also identified, but given the extremely deteriorated nature of even the well preserved posts, it was not possible to confirm that these additional posts were indeed posts and not the remains of some other organic matter.

posts. Of these, 90.4% (n = 47) were wood while 9.6% (n = 5) were reed. The reed posts had an average diameter of 1.9 cm with a range of 1-3 cm, while the wooden posts averaged 4.1 cm in diameter with a much greater range of 1.5-18.1 cm. When taken together, the post diameter from both wood and reed posts has a 5% trimmed mean of 3.5 cm, and range in diameter from a minimum of 1 cm to a maximum of 18.1 cm. Examination of the distribution of the diameters of posts reveals that six of the posts represent outliers with respect to their unusually large diameters (> 7.1 cm; Table 5.1).

Table 5.1: Stem-and-leaf diagram of post diameters from Excavation Block 1

Frequency	Stem &	Leaf
5.00	1 .	00555
18.00	2 .	000000000000002445
12.00	3 .	000000000005
6.00	4 .	000005
2.00	5 .	05
3.00	6 .	000
6.00 Extremes		(>=7.1)

Stem width: 1.0
Each leaf: 1 case(s)

Unfortunately, the entire horizontal extent of the structure has not been exposed, and therefore it is difficult to determine the precise shape and layout of the structure. Nevertheless, several observations can be made. The structure appears to be comprised of a wall approximately 12.94 m in length, running roughly grid north-south (Figure 5.7; Wall 1). Included among the posts making up this wall are the six posts that were classified as being unusually large in diameter. The southern most post of this wall (Locus 51) was the largest in diameter (18.1 cm) and was associated with a very large R-ware sherd that has been used as chocking or wedging for added support along the southern face of the post (Figure 5.8).[10]

[10] When first uncovered, post Locus 51 was the only post that had been identified during the 2000 season and was not known to be part of a structure and therefore was assigned a locus number. However, with the exception of the next post to the north (Locus 58), the practice of giving Locus numbers to individual posts was not typically followed during the 2000 season. The location of the majority of the posts was simply recorded on plan view drawings and using the digital mapping system. Associated information concerning material type and diameter was recorded next to each post on the plan view drawings and in the comment field of the data collector record.

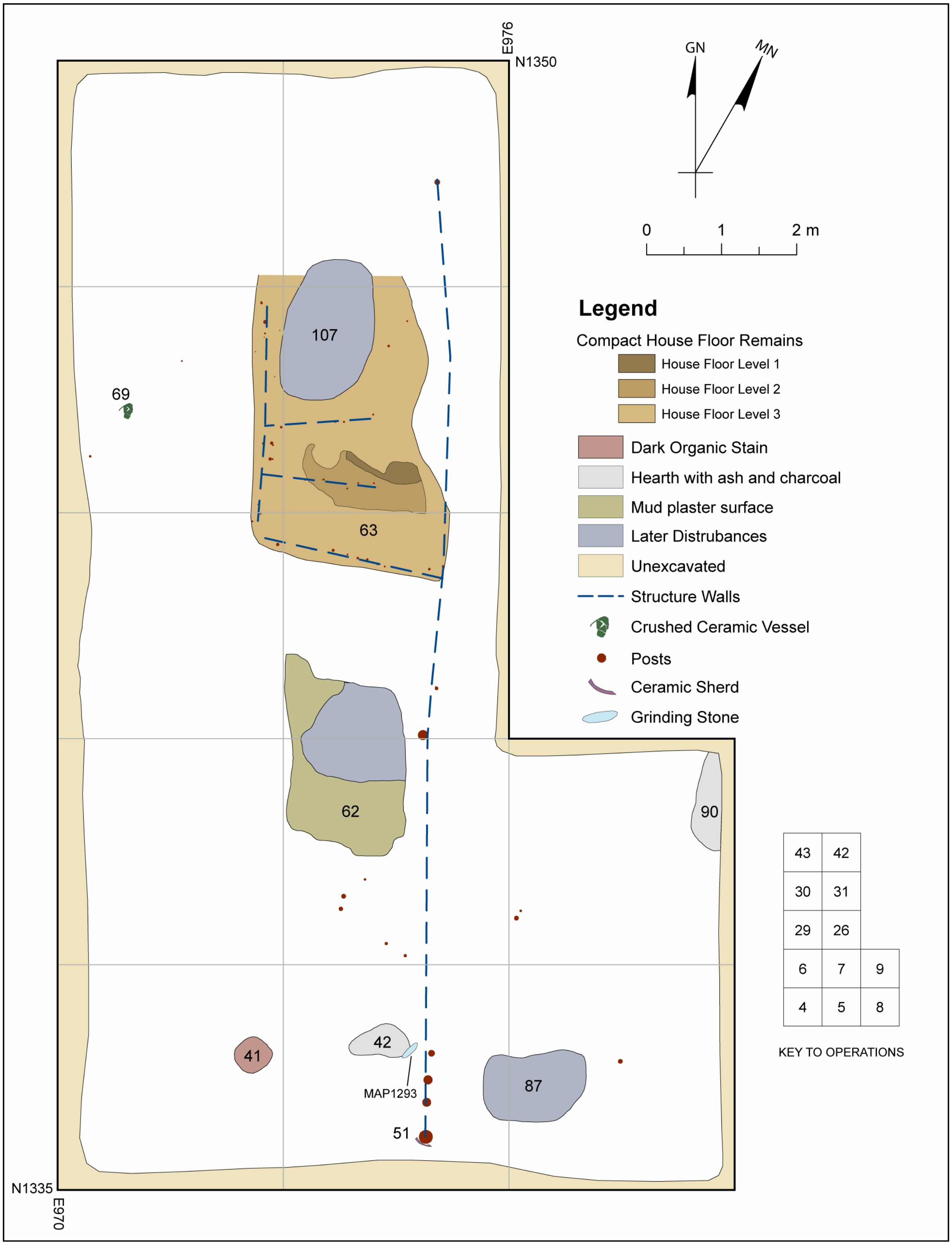

Figure 5.6: **Plan view of Excavation Block 1 showing features associated with Habitation Phase 1A.**

It is interesting to note that with the exception of Locus 51, no other posts in Block 1 have evidence of chocking or reinforcement and there are no *calages* or mud reinforced post mold structures in Block 1.[11]

Perpendicular to this wall were built at least two east-west walls (Figure 5.7;Walls 2 and 4) comprised of smaller diameter posts (generally those ≤ 5.0 cm in diameter) and located toward the northern end of Block 1. Wall 2 forms the southern boundary of Locus 63 (see below). Wall 3 connects these two perpendicular walls and is located approximately 2.5 meters west of the first. It is a north-south running wall that is generally comprised of 2.5-5.0 cm diameter posts and forms the western edge of Locus 63. Based on the recovery of fragments of twigs and segments of vines with knots present, it would appear that this structure was constructed using a combination of vertical posts with mats tied to the posts to form walls that potentially held wattle-and-daub. This would be very similar to contemporary construction techniques still used in small rural villages such as near-by Maslahet Harun as can be seen in a photograph of such a structure taken in 1995 (Figure 5.10).

Locus 63 is an area delineated by Walls 1, 2, and 3 and recognized during excavation as an area of darker brown sands/silts with a high organic content and much more compact than the surrounding deposits (Figures Figure 5.6, Figure 5.7, and Figure 5.9). This locus appears to represent an interior space surrounded on at least three sides and covering an area of at least 8.86 m^2. The eastern boundary of these darker deposits lends support for the reconstruction of Wall 1 extending nearly the length of the Block. Unfortunately, the northern edge of the locus was not well defined, except by the absence of the darker deposits, and it appears that this area may have been impacted by later disturbances. Wall 4 appears to subdivide the space, creating a room or partition approximately 0.95 x 1.6 m in size at the southern end of the structure.

In the portion of Locus 63 immediately north of Wall 2, three strata of floor debris were preserved to varying extents. Given the shallow depth below ground surface of Locus 63, the two uppermost of these strata were not as extensively preserved as the lowermost. The uppermost of these strata was preserved over an area of only 0.17 m^2 while the next lowest covers only 0.72 m^2. Material recovered from this Locus included lithic debitage, faunal and

[11] See Section 5.2.3.4 below for a definition and discussion of mud reinforced post molds or *calages.*

botanical remains, ceramic sherds, fragments of wood, knotted vine fragments, and a large bivalve shell (see Section 6.0).

A second apparent living surface, Locus 62, was identified and appears to have been associated with the post structure in Habitation Phase 1A (Figure 5.6). Originally thought during field excavation to be associated with a potential later tomb intrusion, Locus 62 is a rectangular area of prepared mud plaster floor/surface measuring 1.59 x 2.34 meters in maximum dimensions (Figure 5.11). While impacted in the northeastern corner by later pitting, this surface would have originally covered an area of approximately 3.35 m^2. The mud plaster used to construct the surface is heavily tempered with straw/organic material and had a surviving thickness of approximately 2-3 cm. The southern and eastern edges of the plastering appear to "lap" upward, suggesting that this surface is associated with Wall 1 and a wall to the south for which no posts survived or were identified during excavation.

The remains of the post structure were compared to a similar structure identified at the Naqada IC-IIID site of Adaïma located south of Esna. Here, a post structure designated Structure C1 and measuring 4.3 m x1.2m was defined by 39 posts ranging in size from 2 cm to as large as 14 cm in diameter (Midant-Reynes and Buchez 2002: 37-40; and Appendix III, 149-160).[12] An examination of the distribution of post diameters from the two structures reveals that diameters from the el-Mahâsna Block 1 Structure tend to be skewed toward the lower end of the distribution and have a less normal distribution with several outliers to the upper end of the scale, while those from the structure at Adaïma, while also slightly skewed downward, have a much more normal distribution (Figure 5.12). The mean post diameter for Structure C1 at Adaïma is 5.69 cm, which is 1.78 cm larger on average than the posts recovered from Block 1 Structure at el-Mahâsna. While this roughly 2 cm difference in average post diameter might not be considered to be very strong, it is statistically significant (t = -2.815, df = 89, p = 0.006).

[12] The mean diameter of posts associated with Structure C1 was calculated based on information concerning post diameters presented in Appendix III of Midant-Reynes and Buchez 2002. In cases where a post diameter was listed as "12 x 9", the maximum dimension was used as the post diameter.

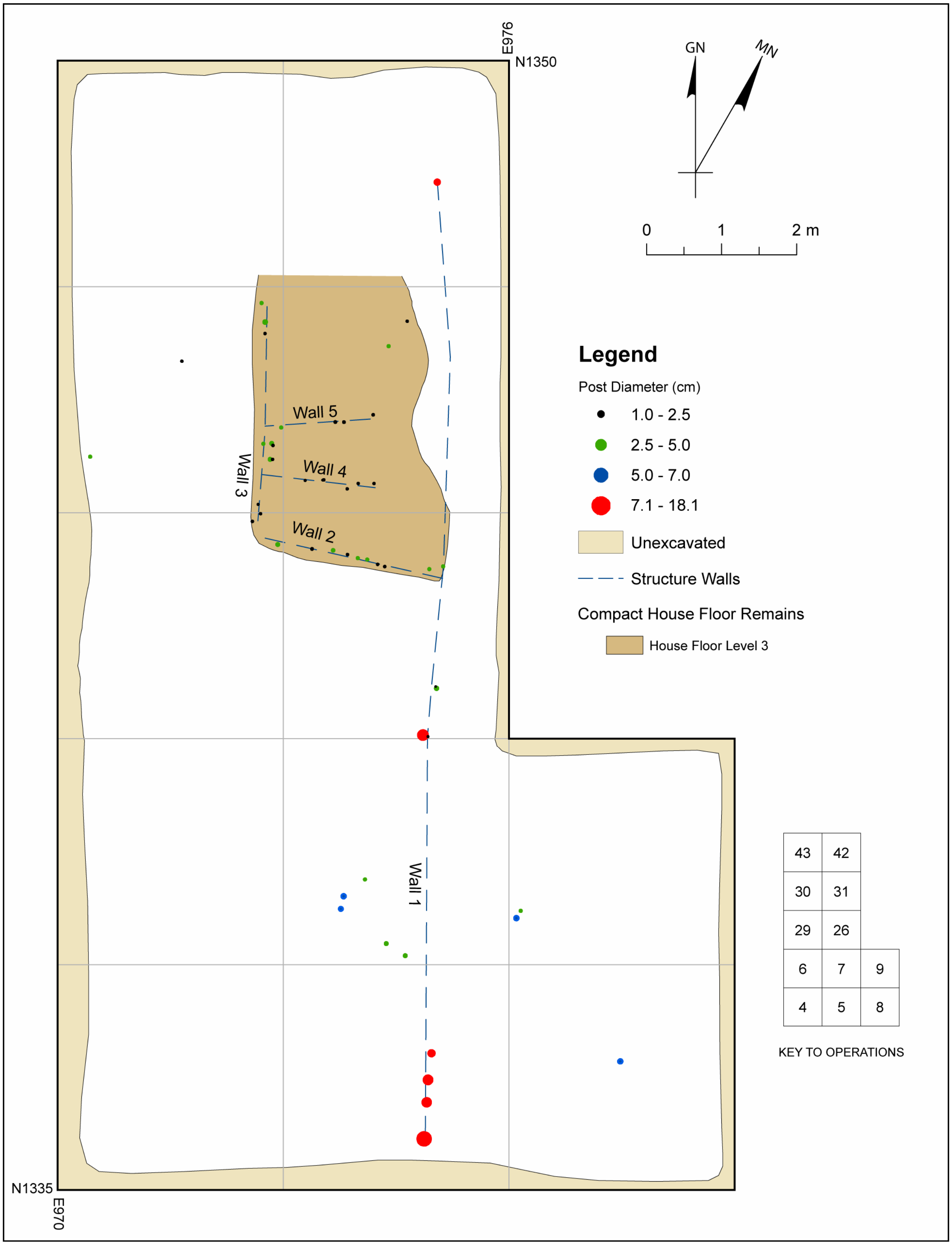

Figure 5.7: Post structure in Excavation Block 1

Figure 5.8: Large Post (Locus 51) at southern end of Structure in Excavation Block 1.

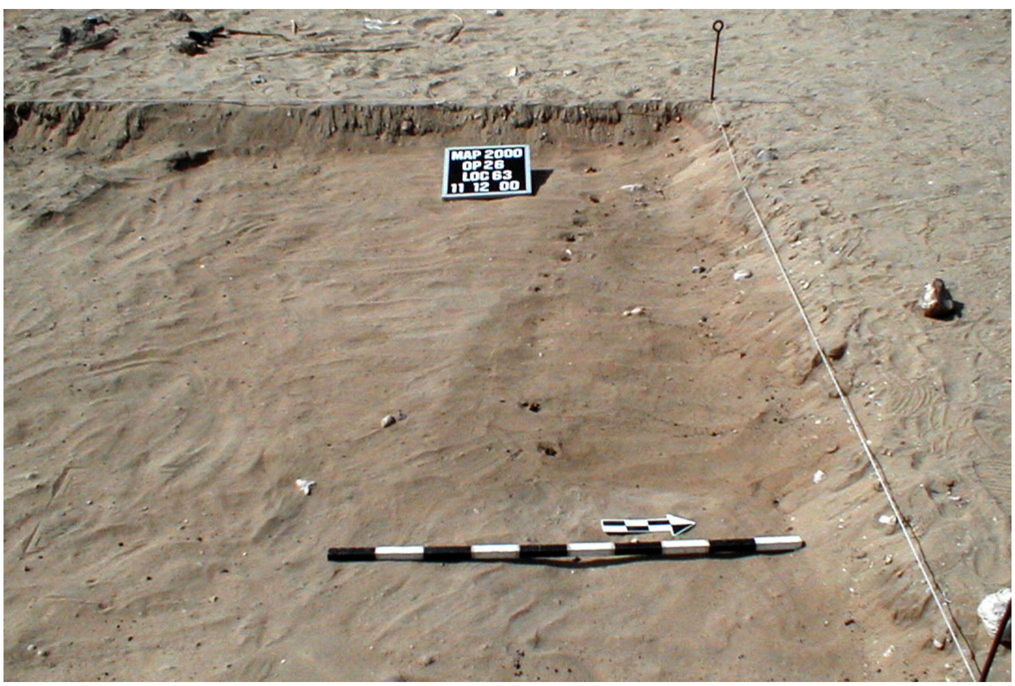

Figure 5.9: Locus 63 in Operation 26 with darker materials as well as Wall 2 posts visible.

Figure 5.10: Modern house in the village of Maslahet Harun showing example of post and mat architecture.

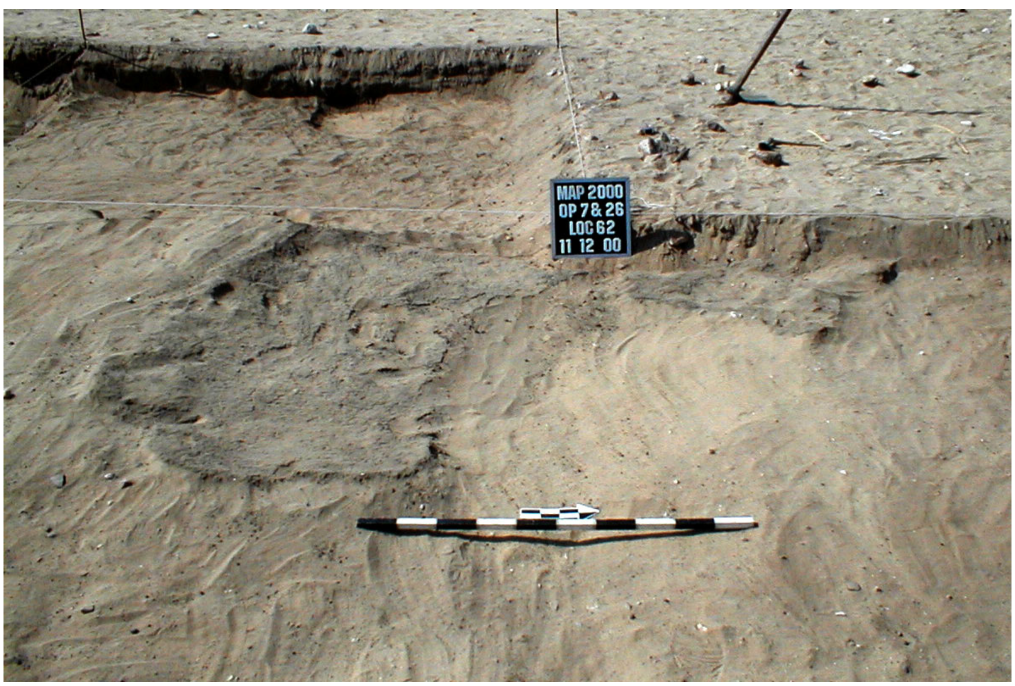

Figure 5.11: View of Locus 62, the mudplaster surface.

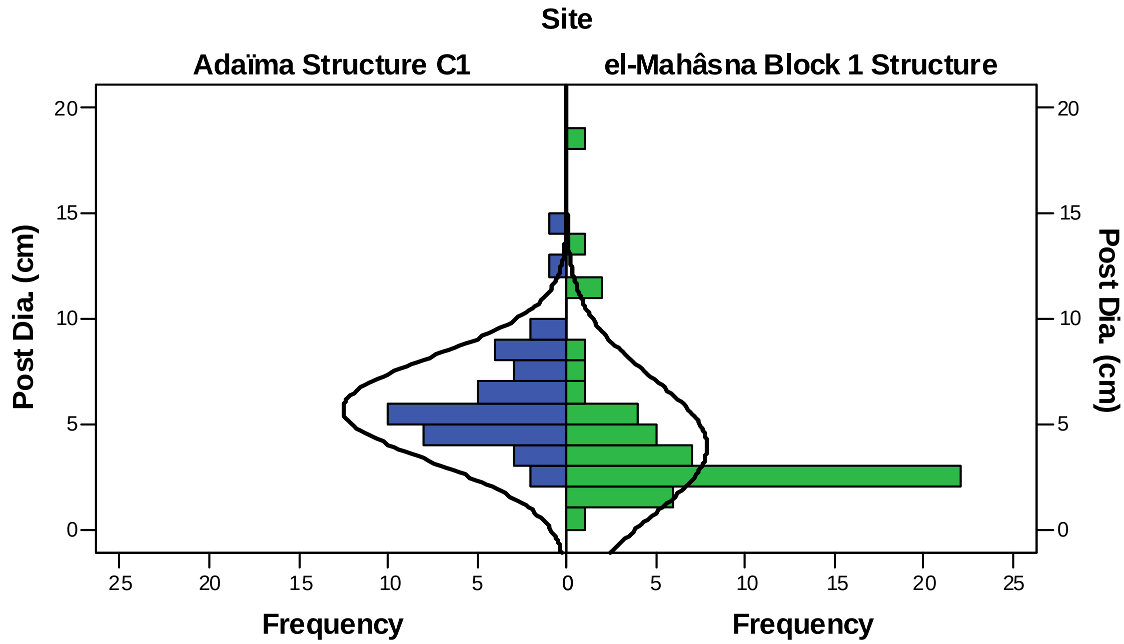

Figure 5.12: Distribution of post diameters from el-Mahâsna Block 1 Structure and Structure C1 at Adaïma.

Pyrotechnic Features – Hearths and Ash Pits: Two hearth/ash pit features were identified in Excavation Block 1 as associated with Habitation Phase 1A. The first of these, Locus 42, is an oblong shaped, shallow pit containing ash and charcoal rich sands and silts found in Op 5, just west of Wall 1 of the post structure (Figure 5.6 and Figure 5.13). With a maximum length of 82 cm and maximum width of 44 cm, Locus 42 extended approximately 18 cm into the underlying deposits. The hearth did not have any discernable internal structure, nor did there appear to have been any special preparation of the pit itself.

Locus 90 is similar to Locus 42, but slightly larger in size with a maximum length of 131 cm and a maximum width of at least 40 cm.[13] Vertically, Locus 90 extends approximately 25 cm in depth, with the deepest portion of the hearth being the southern end, while the northern end was relatively shallow. As with Locus 42, Locus 90 did not appear to have any discernable internal structure and the pit was not lined.

[13] The final dimensions of Locus 90 are not known as the eastern portion of the feature was unexcavated at the end of the 2000 field season.

Miscellaneous Features: In addition to those features already described, two other features from Excavation Block 1 are associated with Habitation Phase 1A. These are Locus 41 and Locus 69 (Figure 5.6). Locus 41 is a shallow (< 7 cm), 50 cm in diameter, circular stain of very organic rich materials containing the remains of sheep/goat dung as well as what appears to be a limey, plaster-like substance.

Locus 69 is a Black-topped red ware ceramic vessel that was found broken in place just below the modern ground surface in the western half of Op 30 (Figure 5.14 and Figure 6.6).

Chronological Assignation of Habitation Phase 1A: Based on recovered ceramic rim sherds from deposits and features, Habitation Phase 1A appears to date to the Naqada IIa-b.

Figure 5.13: Locus 42.

Figure 5.14: Locus 69.

5.2.1.2 Habitation Phase 1B

As with Habitation Phase 1A, the main stratigraphic deposit associated with Phase 1B is a Locus 44. Comprised of dark, organic rich, fine sands and silts, Locus 44 is a stratum resulting from Predynastic habitation debris and midden deposits which have accumulated within and around the post structure. Another stratum associated with this phase of occupation in the area of Block 1 is Locus 64. This stratum is described as a loose yellowish brown sand containing silts and fine charcoal particles. Averaging 21 cm in thickness, Habitation Phase 1B deposits ranged in thickness from as few as 7 cm in the northern end of the block to as much as 40 cm in the northwestern corner of Operation 5.

Structural Remains – Living Floors and Posts: The post structure discussed above, while believed to have been originally constructed during this phase, is less complex in nature than that described above during Phase 1A. In fact, during Phase 1B, it appears as though this structure consisted only of Wall 1, as the bases of the posts associated with Walls 2-5 did not extend sufficiently into Phase 1B deposits such that they would have been able to support walls during this period.

Pyrotechnic Features – Hearths and Ash Pits: Two hearth/ash pits are associated with Habitation Phase 1B (Figure 5.15). Both features are very similar in form and dimension. The first of these, Locus 61, measures 52 x 46 cm and is roughly circular in plan view with a shallow bowl shape in profile, with a maximum depth of 8 cm. Locus 109 is also circular in plan view with similar dimensions of 51 x 44 cm with a shallow bowl shape profile and a maximum depth of 10cm. In both cases, the matrix of these loci consisted of ash and/or ashy silt with charcoal.

While Locus 61 produced lithic debitage, nine fragments of faunal remains, and 24 ceramic sherds, only a single, non-descript, figurine fragment was recovered from Locus 109 (see Section 6.4.3; MAP 2823).

Miscellaneous Features: The only other feature associated with Habitation Phase 1B is Locus 46, a possible lithic cache. Located in Operations 4 and 5, Locus 46 consists of a group of lithic cores resting in a small pit 30 cm in diameter (Figure 5.15 and Figure 5.16). Placed on top of this pit was a rough tabular piece of limestone acting as a cap-stone.

Chronological Assignation of Habitation Phase 1B: Dating of Habitation Phase 1B was based upon an examination of diagnostic rim and body sherds recovered from deposits and features associated with this phase. Based on all those sherds examined, Phase 1B appears to date to the Naqada Ic-IIb period. However, the extension of this phase into the Naqada IIb sub-period is based solely on the recovery of a single D-ware sherd (MAP 1298.001; Figure 6.22) from the upper-most surface of Phase 1B in Operation 5. This sherd may very well have originated in the directly overlying Phase 1A deposits with which it fits chronologically. If one does not consider this single sherd, the remaining sherds from Phase 1B form a very nice, tight cluster from the Naqada Ic-IIa. Therefore, I have chosen to use this latter dating for the Phase.

5.2.1.3 Habitation Phase 1C

This phase of Habitation is represented by a thin deposit of Locus 64 materials overlying Locus 65, a stratum of compact sands, pebbles, and gravels that slopes upward in a west to east direction. Deposits associated with this Phase, while identified in other operations, were only excavated in Operations 4, 29 and 30. Therefore, no calculation has been made concerning the thickness of deposits as excavated. Artifacts recovered from this Phase include lithic debitage, faunal remains, and limited ceramics. Only 90 sherds were recovered from this Phase, with 78.8% (n = 71) being recovered from Locus 81.

Features: Only a single feature was identified as associated with this phase. Locus 81 appears to be a tomb pit, which was looted during Predynastic times. Located in the northwestern portion of the excavation block, Locus 81 is 1.88 m in length north-south and 1.28 m in width east-west (Figure 5.17). Containing a matrix of light yellowish brown sand, this pit was not visible until the removal of both the Locus 44 and Locus 64 materials. Because of time constraints at the end of the excavation season, it was not possible to excavate this pit in its entirety. However, from the excavation that did take place, lithic debitage, 71 ceramic sherds, and 43 pieces of bone were recovered, including human bone fragments. The human bone fragments discussed below (Loci 59 and 60) may be associated with this burial but are more likely to be associated with later period burials given their origin very high in the stratigraphic profile.

Chronological Assignation of Habitation Phase 1C: Given the limited amount of deposits excavated from Phase 1C, only three rim sherds were recovered. In all cases, these rim sherds were two small to provide accurate vessel shape information. Therefore, it is not possible at this time to date this phase of occupation of the Block 1 area.

5.2.1.4 Post-Predynastic Remains

It is necessary to briefly mention several later period intrusive features that were identified within the area of Excavation Block 1 (Figure 5.6). Primarily, these are related to the occurrence of concentrations of human remains and the depressions from possible Old Kingdom – First Intermediate Period pit tombs excavated by Garstang or possibly looters. However, in the case of the latter, these pits/in-filled depressions may in fact be the result of either ancient and modern looting activities or the result of *sebbakh* digging.

Two concentrations of human remains were identified in Operation 6 at the base of Locus 2 and within the upper 5-10 cm of Locus 44. In both cases, these remains most likely originated from the excavation and/or looting of nearby Loci 87 and 107 described below. However, there is also a possibility, though very slight, that given the proximity to Locus 81 described above, they may in fact be human remains associated with this early burial.

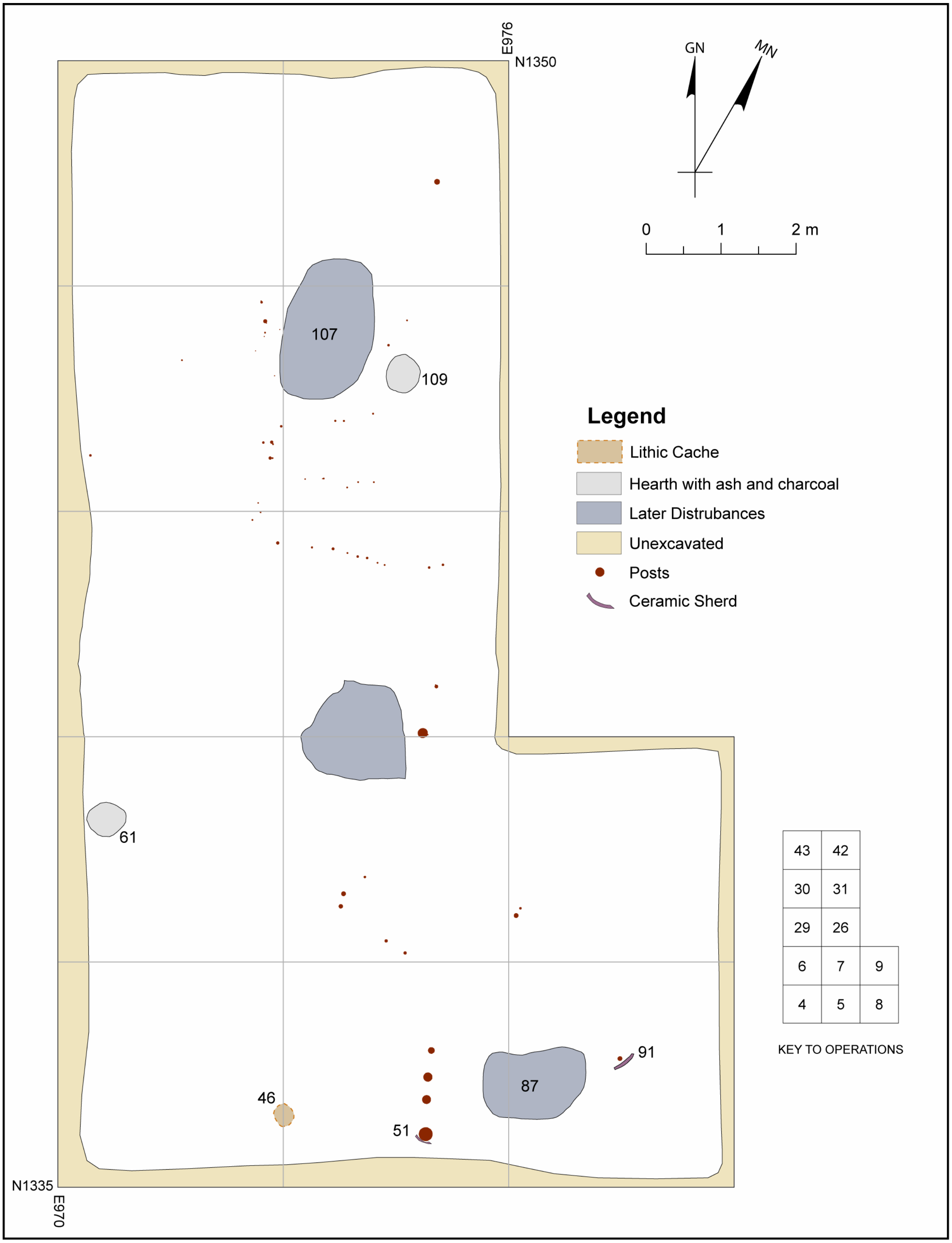

Figure 5.15: Plan view showing features associated with Habitation Phase 1B.

Figure 5.16: Locus 46.

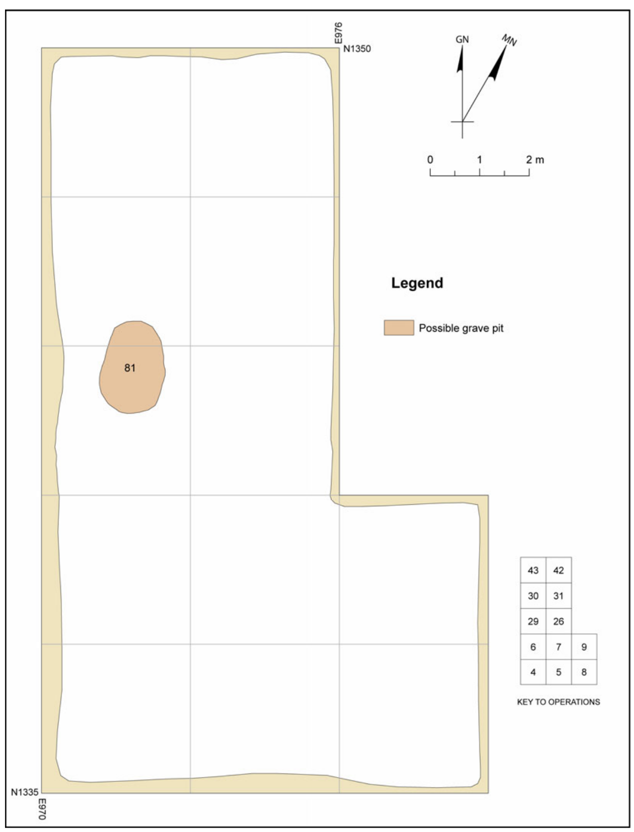

Figure 5.17: Location of Locus 81, Habitation Phase 1C.

Two depressions, both filled with relatively clean yellow/yellowish brown sand were identified as excavated/looted tomb pits dating most likely from the Old Kingdom-First Intermediate Period. In the case of Locus 87, this pit does not appear to have significantly impacted the Predynastic period remains. However, Locus 107 did impact the post structure as well as the living floor remains (Locus 63) associated with the structure.

Also deserving of mention here is the pit feature that impacted the northeast corner of Locus 62 which also appears to be either a Old Kingdom-First Intermediate Period tomb pit or a later looter's hole. This feature is described above on page 78

5.2.1.5 Excavation Block 1 Summary

In summary, the remains uncovered in Excavation Block 1 appear to represent in-situ habitation features and midden deposits associated with a large, partially exposed structure. This structure was delineated based on the recovery of 58 wooden and reed posts arranged in a pattern forming a long north-south wall with at least two perpendicular walls running east-west and a shorter north-south wall approximately 2.5 meters west of the first. Based on ceramic materials recovered from the stratigraphic deposits associated with this structure, the remains identified in Excavation Block 1 date to the Naqada Ic-IIab subperiods.

5.2.2 Excavation Block 2

Positioned near the edge of the low desert escarpment, Excavation Block 2 is 3 x 9 meters in size and is comprised of three contiguous Operations, OPs 11, 12, and 13. Block 2 was situated so as to investigation the nature of deposits along the edge of the site area and also due to the relatively high number of Predynastic period sherds recovered from an adjacent surface collection (SC-N1300 E1000) . The area occupied by Block 2 is situated just at the base of a slight north-south direction slope and just west of the slope which leads down to the low desert edge, located approximately 17 m to the east (Figure 5.18).

Excavations within Block 2 resulted in the removal of an average of 77 cm of Predynastic period deposition for a combined excavated volume of approximately 20.79 m^3. Analysis of the excavations in Block 2 have resulted in the identification of three primary Predynastic habitation phases which appear to be associated with an outdoor activity area. Features associated with these habitation phases include clusters of artifacts on living surfaces, a large hearth feature, two smaller ash features, as well as evidence for a fence or reed wall. Categories of artifacts recovered from Block 2 include ceramic sherds, lithic debitage and tool fragments, faunal and botanical remains, bone tools, perforated ceramic disks, eggshell, groundstone, wood, and animal coprolites, among others.

Figure 5.18: Area of Excavation Block 2 (right half of photograph) showing the relationship to the edge of the low desert escarpment.

5.2.2.1 Habitation Phase 2A

Habitation Phase 2A is the upper most phase identified in Excavation Block 2 and ranges in thickness from 20 cm to as thick as 27 cm, with an average thickness of 23 cm. Habitation Phase 2A encompasses deposits associated with both deflated desert surface (Locus 2) as well as the upper portions of a stratum of Predynastic habitation debris/midden designated Loci 38 and 66. These loci represent an inter-fingering of micro depositional events varying in extent both horizontally and vertically (Locus 38) within a more homogenous stratum of deposition (Locus 66). Locus 38 was light brownish gray to gray in color and contained varying amounts of artifacts, ash, and charcoal. Locus 66 consisted of pale brown silty sand/sand deposits generally containing less ash and charcoal than Locus 66, but appeared to contain larger quantities of artifacts. An attempt was made during excavation to remove these deposits separately, but occasionally it was necessary to excavate them as "Locus 38/66" because of the inter-digitated nature of the remains. This interweaving of Loci 38 and 66 continued throughout the entirety of Habitation Phase 2A. The top and base of these deposits sloped in a north to south direction, mimicking the slope of the modern ground surface as well as the underlying pre-Predynastic ground surface. Taken together, these two loci appear to represent deposition from a combination of activity area debris and intentional trash disposal from nearby activity areas/structures in Block 3.

Features: Features associated with Habitation Phase 2A (Figure 5.19) include a portion of a broken ceramic vessel (Locus 39), a dark circular organic stain (Locus 40), a cluster of artifacts (Locus 67) and a large hearth (Locus 52). All of these features appear to be related to a slightly more compact living surface located just below the level of the deflated desert surface (Locus 2).

Locus 39 consisted of several large B-ware ceramic sherds broken *in-situ* surrounding a lump of a white limey substance that resembled harden lime plaster (Figure 5.20). Located in Operation 12, Locus 40 was an area of dark organic staining and decaying organic material measuring 29 x 34 cm in plan view. As can be seen in Figure 5.19, Locus 40 was situated on top of Locus 52, with only centimeters separating the two features vertically. While extremely decayed, the organic material that made up the feature appears to be the remnants of either basketry or matting.

The largest feature uncovered in Excavation Block 2 was Locus 52, a large hearth structure. Measuring 120 x 135 cm in plan view, this complex hearth had a maximum depth of 37 cm. Unlike those hearth features described above in Excavation Block 1 (page 82), Locus 52 was a more substantial structure with evidence of intentional construction. Bowl-shaped in cross section, the walls of Locus 52 appear to have been intentionally lined with mud/clay and small rocks prior to initial use (Figure 5.22). Over time, this prepared lining was baked hard and resembled a coarse ceramic in appearance and texture. While the upper stratum of feature fill was characterized by a loose ashy sand matrix, the lower portion was a dense stratum of charcoal and burned material. From the rubified nature of the surrounding sands, coupled with the baked nature of the mud/clay lining, it is obvious that this hearth was utilized multiple times over a period of time. In both size and internal structure, this hearth is similar to Type D hearths as defined by Tristant (2004:97-100) and is the only example of this complex form so far identified at el-Mahâsna during the modern excavations.

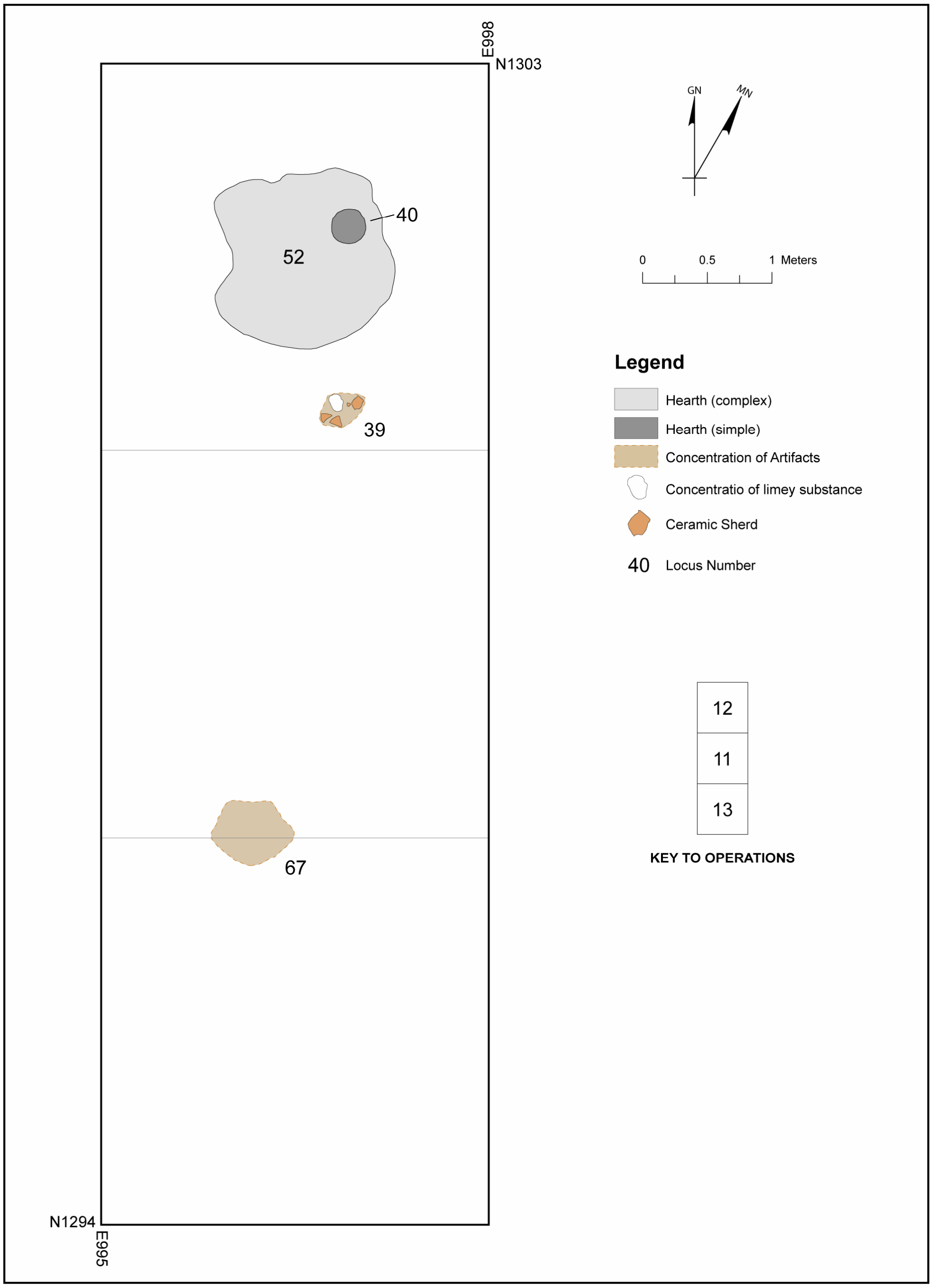

Figure 5.19: Plan view of Habitation Phase 2A showing the locations of associated features.

Figure 5.20: Locus 39

Figure 5.21: Locus 52 in plan view

Figure 5.22: Locus 52 in profile view

Chronological Assignation of Habitation Phase 2A: The majority of ceramic materials recovered from Phase 2A indicate a Naqada IIab-c date for these deposits. This dating has been extended into at least the Naqada IIc based on the recovery of a single body sherd of a D-ware vessel with a wavy-handle recovered from deposits of this Phase (MAP1150.001). However, the majority of the materials recovered suggest a date of Naqada IIa-b.

5.2.2.2 Habitation Phase 2B

Habitation Phase 2B is represented by the accumulation of midden deposits designated as Loci 38 and 66. These two matrices became much more homogeneous shortly below the top of the habitation zone such that Locus 38 was no longer recognized below the first 5-10 cm of the habitation phase. Deposits associated with Habitation Phase 2B averaged 21 cm in thickness and ranged from as little as 16 cm at the northern boundary of Op 11 with Op 12, to as much as 25 cm. Artifact types recovered from this phase of habitation include ceramics, faunal remains, lithic debitage and tool fragments, bone tool fragments, coprolites, shell, groundstone, perforated ceramic disks, and a fragment of a possible mud sealing. No features were associated with Habitation Phase 2B.

These materials associated with Habitation Phase 2B appear to represent a series of midden deposits and outdoor living areas which accumulated between the much more recognizable living surfaces associated with Habitation Phase 2A and 2C.

Chronological Assignation of Habitation Phase 2B: Based on recovered ceramic rim sherds from deposits and features associated with Habitation Phase 2B it would appear that this Phase dates to Naqada IIa-b.

5.2.2.3 Habitation Phase 2C

Habitation Phase 2C was defined based on a recognized living surface associated with a visible change in the nature of the stratigraphic deposition. Comprised of the very lower most Lots of Locus 66 and deposits from Loci 80 and 94/93, Habitation Phase 2C deposits ranged in thickness from a maximum of 31 cm in the central portion of the block to as little as 16 cm at the northern edge of Operation 12, with an overall average thickness of 26 cm.

The upper surface of Habitation Phase 2C is characterized by a compact living surface comprised of two vertically coterminous, but horizontally distinct deposits (Locus 80 to the north and Locus 93/94 to the south) which appear to represent deposits that have accumulated on either side of a fence/wall like structure. This fence/wall line corresponds roughly with the boundary between Operations 11 and 12. Locus 80 is comprised of brown, consolidated/compacted sands, pebbles, and small gravels, which have a much higher organic content along the boundary with Locus 94/93. Locus 94/93 is characterized by light brownish gray sands with little gravel or inclusions (<10%). Further, Locus 94/93 deposits are much less consolidated/compacted. Both Locus 80 and Locus 94/93 rest upon a stratum of naturally deposited silts (Locus 89) which occurs at a depth ranging from 64 cm to 88 cm below modern ground surface and represents the pre-settlement land surface.

Evidence of the fence/wall was recovered at the base of Habitation Phase 2B in the form of a wooden post preserved in three pieces measuring a total of 122 cm in length lying flat upon the Habitation 2C surface. It was clearly apparent from its position that it has collapsed or been knocked down. There was some evidence, though not clear, of a highly decayed portion of the post continuing vertically into the under lying deposits. Additional evidence for the fence/wall was present in the location of artifacts upon the living surface itself. Materials deposited upon the living surface abruptly stop along a roughly east-west line, with heavier concentrations present to the north of this line as well as a much stronger organic content along the northern edge of the line. Further, the deposits to the north of the line were much more compact, and contained a higher content of lithic debitage, faunal remains, and small pebbles and rocks, while those to the south of the line (Locus 94) were much loser in nature and contained much fewer artifact and rock inclusions. This division between Locus 80 and Locus 94 materials can clearly be seen in Figure 5.23; especially in the concentration of date pits (Figure 5.23b). Other features associated with the living surface are Locus 84, a concentration of seeds found lying on the surface of Locus 94 in Operation 11, and Locus 88, a cluster of animal hair, mostly goat, found on Locus 80, although this last feature may be associated with a nearby rodent disturbance. No other features were identified associated with this phase of habitation.

Figure 5.23: Habitation Phase 2C showing the visible line of a former fence/wall. A. Note the distribution of materials along the northern side of the wall; B. Close up of the concentration of date pits visible in the lower portion of A.

Chronological Assignation of Habitation Phase 2C: Dating of Phase 2C was based upon an examination of ceramic rim sherds as well as a C-ware body sherd. These materials suggest a date of Naqada Ic-IIab for this Phase.

5.2.2.4 Excavation Block 2 Summary

The area of Block 2 appears to represent a combination of outdoor activity zone and trash disposal area. There appears to have been a wall/fence present that was either part of a structure, or helped to define/divide the outdoor space. From ceramics recovered in Block 2, the excavated deposits date to the Naqada Ic-IIc periods.

5.2.3 Excavation Block 3

Comprised of 18 contiguous Operations (OPs 10, 16 – 23, 32 – 39, and 41) and encompassing 162 m^2, Excavation Block 3 is the single largest excavated area from post-Garstang excavations at el-Mahâsna. The area surrounding Block 3 is slightly elevated from the surrounding terrain, and characterized by an undulating ground surface comprised of numerous rises as well as several deeper depressions (Figure 5.24). The ground itself is very dark in color and has a very high concentration of surface artifacts, primarily ceramics, but also faunal and lithic materials. Based on the nature of the ground surface, it was believed that this area represented either an area of excavation dump from Garstang's 1900-01 excavations, 2) one of the "mound" areas subjected to *sebbakh* digging noted by Garstang, and shown on his map (Garstang 1903:6 ; Plate II); or 3) a disturbed area resulting from a combination of these two factors.

Excavation Block 3 was started as OP 10 in this area initially as a single 3 x 3 m test excavation, with the purpose of determining which of these three factors caused the disturbed appearance of this area. The placement of Block 3 was also such as to investigate the unusually dense concentration of surface materials recovered from surface collections SC-N1285 E970, SC-N1285 E985, and SC-N1300 E985; which represent three of the four densest surface collections with respect to Predynastic period ceramics. This OP 10 revealed evidence of excavation dumping upon a surface that had, prior to 1900/01 been impacted through the activities of the *sebbakhin*. However, below these disturbed levels, Operation 10 quickly revealed a very intact sequence of stratified Predynastic period deposits associated with what appears to be a rather substantial post structure. Therefore, Block 3 was expanded as a series of 18 operations to expose this structure. This expansion occurred to the down-slope areas of the eastern side of the visible rise (i.e. to the east and north of OP 10) in order to minimize the amount of overlying deposits that would need to be removed in order to reach the depths of the floor remains of the structure.

Excavations within Block 3 resulted in the removal of an average of 0.99 m of Predynastic period deposition for a combined excavated volume of approximately 161.55 m^3. Depths of excavation in Block 3 ranged from a maximum of 1.69 m in the southwest corner of OP 16 to as little as 0.34 m in the northeast corner of OP 38, Analysis of excavation results from Block 3 revealed a complex sequence of stacked Predynastic living surfaces associated, at least for the lower levels, with a large structure, possibly ceremonial in nature. Following a review of the excavation records and a series of six reconstructed cross sections running both east-west and north-south through the block, it has been possible to define at least 5 habitation phases based on the presence of compacted living surfaces, and co-planar occurrence of features. These 5 phases are, unfortunately, not represented in all operations that make up Block 3, and the upper most of these, Habitation Phase 3A is only preserved in portions of OPs 10 and 16.

From the perspective of both recovered artifacts and features, Excavation Block 3 shows the greatest diversity in Predynastic remains. Feature types identified include prepared "mud plaster" floors, large, reinforced post holes, in-the-floor ceramic vessel emplacements, hearths, pits, and compacted living surfaces. Artifact categories recovered from Excavation Block 3 include complete ceramic vessels, ceramic sherds, lithic debitage and tools, projectile points, mace fragments, querns, pestles, bone needles and awls, spindle whorls, copper needles, beads and pendants, and a large assemblage of anthropomorphic and zoomorphic figurines and figurine fragments.

5.2.3.1 Habitation Phase 3A

Habitation Phase 3A represents the latest identified Predynastic occupation in the area of Excavation Block 3. Highly impacted and destroyed by the activities of the *sebbakhin*, Phase 3A was only recognized in portions of OPs 10 and 16 (Figure 5.26). Deposits making up the primary matrix of Phase 3A were designated during excavation as Locus 2, as this phase was not clearly identified at first during excavation and was originally thought to be part of Garstang's dump material, and Locus 43. Because of this failure to notice the remnants of this phase during excavation, there may be some mixing with Garstang dump material overlying the Habitation Phase 3A. It averaged 32 cm in thickness with a range of 6 - 49 cm, where preserved.

Figure 5.24: Area of Excavation Block 3 prior to excavation. Note the undulating nature of the ground surface.

The existence of Habitation Phase 3A was primarily defined based upon an area of preserved, compact living surface remains designated Locus 43. This material is described as compact, organic rich brown to dark brown sand with patches of heavily decayed organic material present on its surface. The boundaries of Locus 43 are amorphous and clearly the result of pitting from the removal of *sebbakh*. The compact deposits of Locus 43 averaged 14 cm in thickness. Artifacts recovered from Locus 43 include ceramics, lithic debitage and tool fragments, animal bone and shell, and a single ceramic figurine fragment.

Features: The only feature identified as associated with Habitation Phase 3A is a pit feature designated Locus 45. This pit is located at the far eastern extreme of the preserved section of Locus 43. Measuring 116 x 53 cm in plan view, Locus 45 had a maximum depth of approximately 35 cm, although the bottom of the pit was indistinct. The matrix of the pit consisted of sand mixed with decayed organics, charcoal, and some silts. Aside from a few ceramic sherds and 17 fragments of animal bone (including 4 fish and 1 cattle), no other artifacts were recovered from the pit fill. Therefore, it is most likely that Locus 45 represents a refuse pit for the disposal of organic based trash.

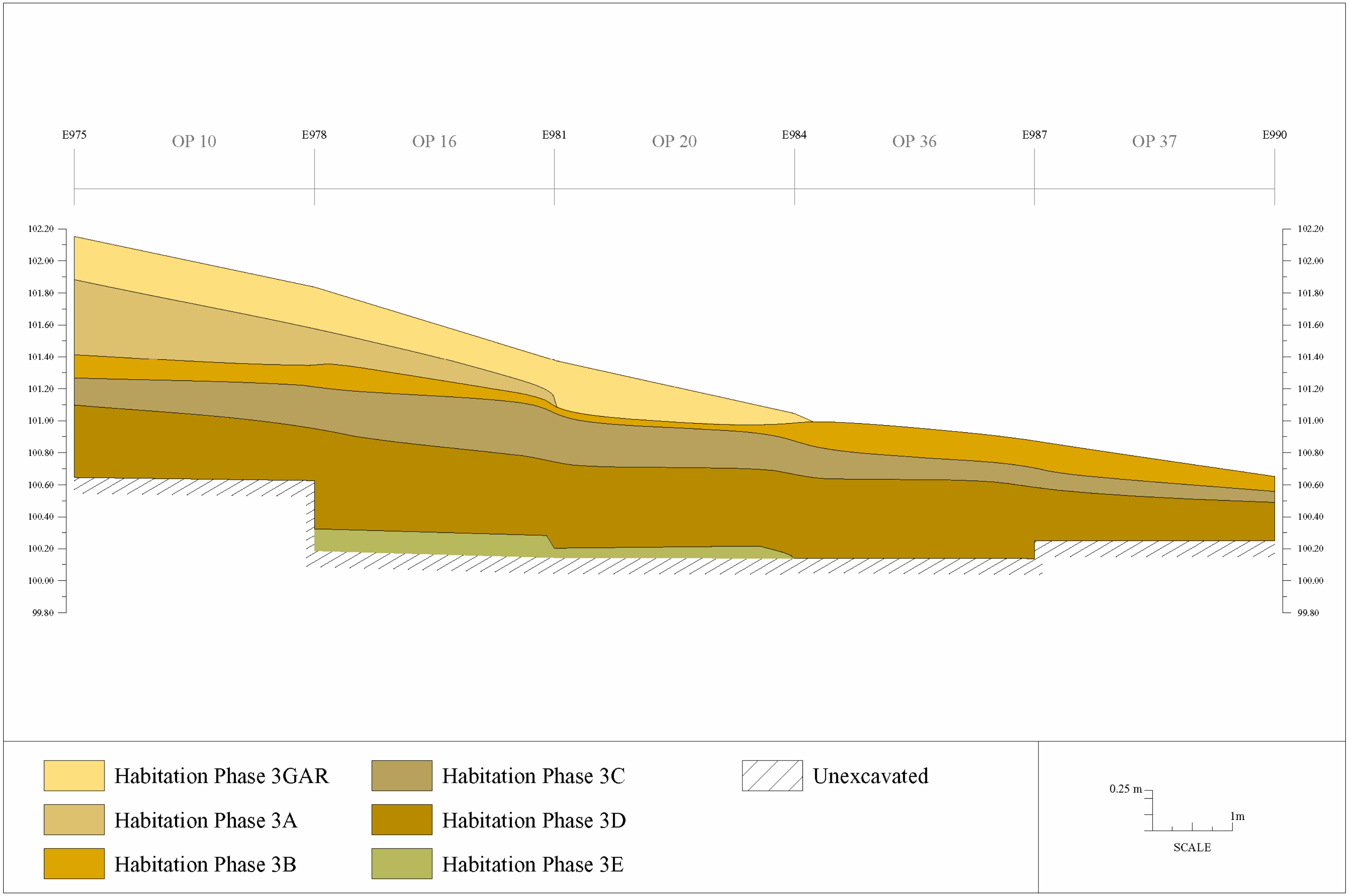

Figure 5.25: Schematic East-West Profile of Excavation Block 3 showing the sequence of reconstructed Habitation Phases.

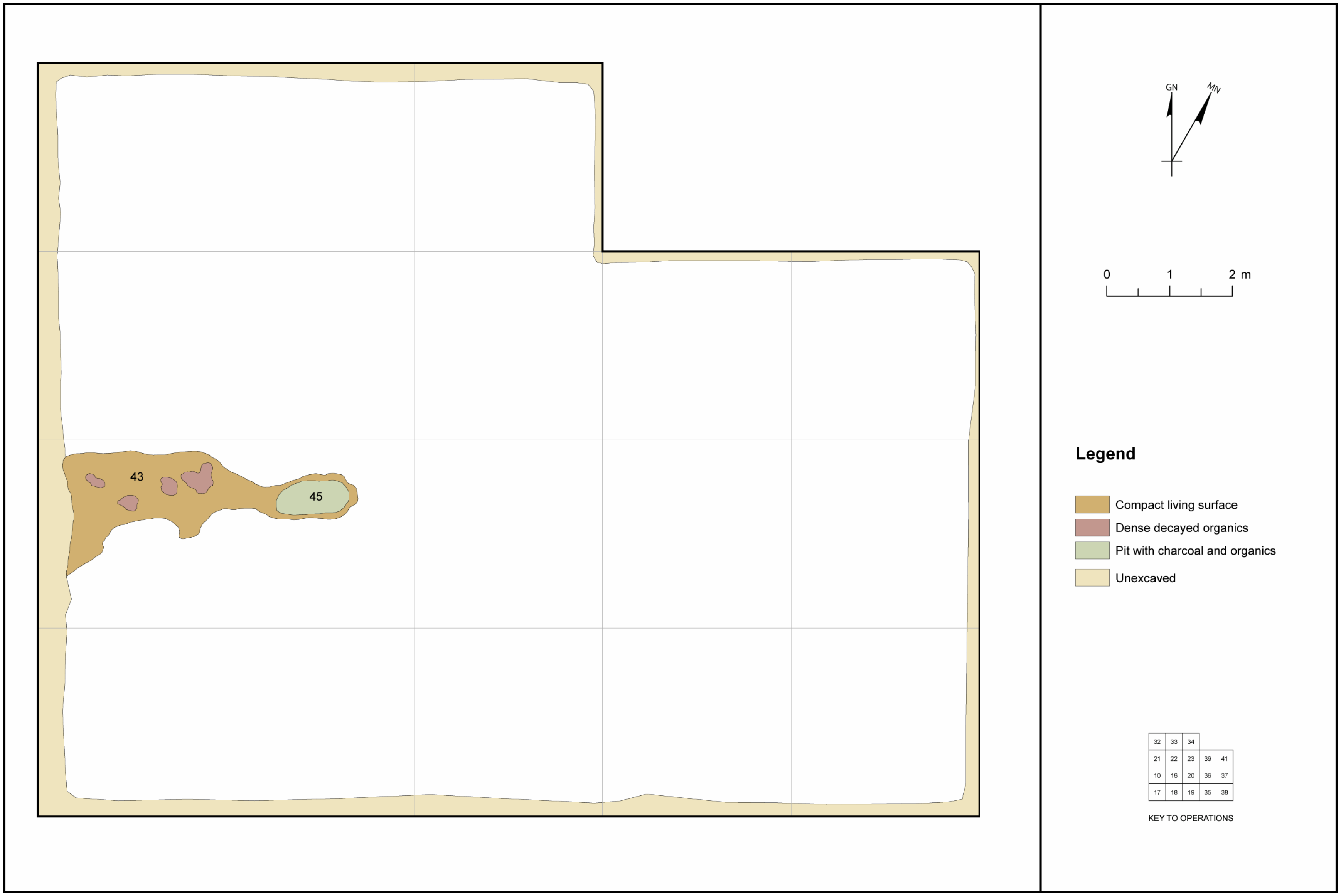

Figure 5.26: Plan view of Excavation Block 3 showing remains associated with Habitation Phase 3A.

Chronological Assignation of Habitation Phase 3A: As was stated above, Habitation Phase 3A was not recognized during the 2000 excavations and was thought to be part of the disturbed deposits associated with the *sebbakhin* and Garstang's dump. Therefore, only 10.2% (*n* = 185) of the approximately 1816 sherds recovered from Phase 3A deposits have been analyzed to date. Of those analyzed, only 14 were rim sherds, all of which were insufficiently preserved to allow for proper shape and chronological determination. Thus it is not possible at this time to assign Habitation Phase 3A to a particular sub-period of the Naqada sequence. However, based on the dating for Phase 3B discussed below, this phase appears to post date Naqada IIa.

5.2.3.2 Habitation Phase 3B

Aside from OPs 10 and 16 as discussed above, Habitation Phase 3B is the uppermost preserved phase in the vast majority of Excavation Block 3; it is present in all Block 3 operations. Deposits which have been assigned to this phase averaged 15 cm in thickness and ranged from 2 cm to as much as 44 cm in the western portion of the block. The primary matrix of Habitation Phase 3B (as well as the remaining phases of Block 3 described below) is a pale brown to very pale brown silty sand containing organic matter, ash, and charcoal particles designated Locus 49. Typically, Phase 3B includes only the uppermost Lot of Locus 49 excavated in any particular operation. While portions of Locus 49 designated as Habitation Phase 3B stretch across the entirety of the block, features associated with this phase are spatially congregated in the west/central portion of Block 3 (Figure 5.27). Artifact categories recovered from Habitation Phase 3B deposits and loci include ceramic vessels and sherds, lithic debitage and tool fragments, animal bone and shell, bone tools, spindle whorls, unbaked clay "pot lids", worked fragments of wooden artifacts, a possible copper bead, a possible mud sealing fragment, and fragments of clay figurines, including a seated women with thigh tattoos (Mah.IV.1 [MAP 2558]; see Section 6.4.1 below).

Features: Features associated with Habitation Phase 3B (Table 5.2 and Figure 5.27) include wooden posts, three ceramic vessel emplacements, and several areas of artifact concentration. All of these features appear to be related to a compact living surface and an area of organic staining (Loci 72 and 74) located in the same general area of the block as Locus 43 in Phase 3A.

Table 5.2: Summary of features associated with Habitation Phase 3B.

Locus Number	Operations	Feature Type	Feature Description
50	10	Ceramic Vessel Emplacement	ceramic vessel
53	10	Ceramic Vessel Emplacement	ceramic vessel
54	17	Artifact Cluster	Concentration of Bone, ceramic with organics &ash
68	21	Ceramic Vessel Emplacement	ceramic vessel
71	33	Artifact Cluster	Ceramic and bone
72	10,16,20,21	Living Surface	large horizontal stained organic area with burning.
74	21,22	Living Surface	Hard packed sand and burned area
76	10	Posts	two wooden posts

Structural Remains –Posts and Living Surfaces: Structural remains associated with Habitation Phase 3B include a living surface as well as three associated wooden posts. Locus 74 is an area of stratified, compact living surface deposits located in the western portion of the block, covering the majority of Operation 21 (Figure 5.27 and Figure 5.28). Originating in Phase 3C (see below), these floor deposits ranged in thickness from 15 – 33 cm, with an average thickness of 33 cm overall across both Phases 3B – 3C, with the upper approximately 5-10 cm belonging solely to Phase 3B (Figure 5.29). Consisting of gray to dark gray, hard packed sands with ash, charcoal, and decayed organic matter, Locus 74 measured at least 2.66 x 2.89 m in horizontal extent. The southern end of Locus 74 is characterized by a dense, linear concentration of organic material. When examined in profile view (Figure 5.29) this organic area appears to be trench-like in nature, with the southern "wall" of the trench being nearly vertical with a maximum depth of 25 cm, while the northern "wall" rises very sharply at first for approximately 10-15 cm and they slopes more gently to the north. The matrix making up the "trench" fill is much looser in composition than the remainder of Locus 74 and consists of sands with a very high content of decayed wood and other organic material mixed with some ash. The far northern end of the organic deposits is slightly darker and woodier in nature than the remainder of the organic fill. The depth of the trench is deepest at the western end, where there is a roughly circular, slightly deeper area. As the "trench" extends to the east, it quickly becomes much more shallow, and eventually is nothing more than a surface concentration of dense organic matter. Also recovered from among this organic material were the decayed remains of a wooden post measuring 4 cm in diameter. This organic stain/trench is interpreted as the decayed remains of a large post (northern end) and intervening matting/wattle of a wall of a large structure, as well as decayed organic material that had accumulated along the wall. This potential structure is discussed further below in Sections 5.2.3.4.

Artifacts recovered from the upper portion of Locus 74 include lithic debitage and tool fragments, 58 ceramic vessel sherds, a complete ceramic vessel (Locus 68; see below), and 16 fragments of animal bone, only one of which was identifiable; as coming from a small rodent.

Adjacent to and associated with Locus 74 is Locus 72, a large area of organic staining extending to the south and west and covering large portions of Operations 10, 16, and part of 20. Locus 72 was described as a thin (2-5 cm thick) layer of organic material with occasional areas of higher concentrations of ash and charcoal. Running roughly east-west, Locus 72 has a maximum east-west dimension of 7.1 m and a north-south dimension of 2.78 m and covers approximately 12.1 m^2. Running along the northern edge of Locus 72 is a band of much darker sands with higher organic content than Locus 72 and the surrounding Locus 49 matrix. This is interpreted as a continuation of the decayed remains of the probable wall associated with Locus 74 and discussed below. This features appears to be a living surface associated with the upper portion of Locus 74 and the probable wall and structure just mentioned. Additional structural features associated with Locus 74 include the remains of two wooden posts (Locus 76) found in the southwest corner of the feature, each measuring 2.5 – 3 cm in diameter (Figure 5.27). Artifacts recovered from Locus 72 include lithic debitage and tool fragments, 265 ceramic sherds, and 66 fragments of animal bone (9 fish, 2 turtle, 2 cattle, 1 sheep/goat, and 2 small rodent).

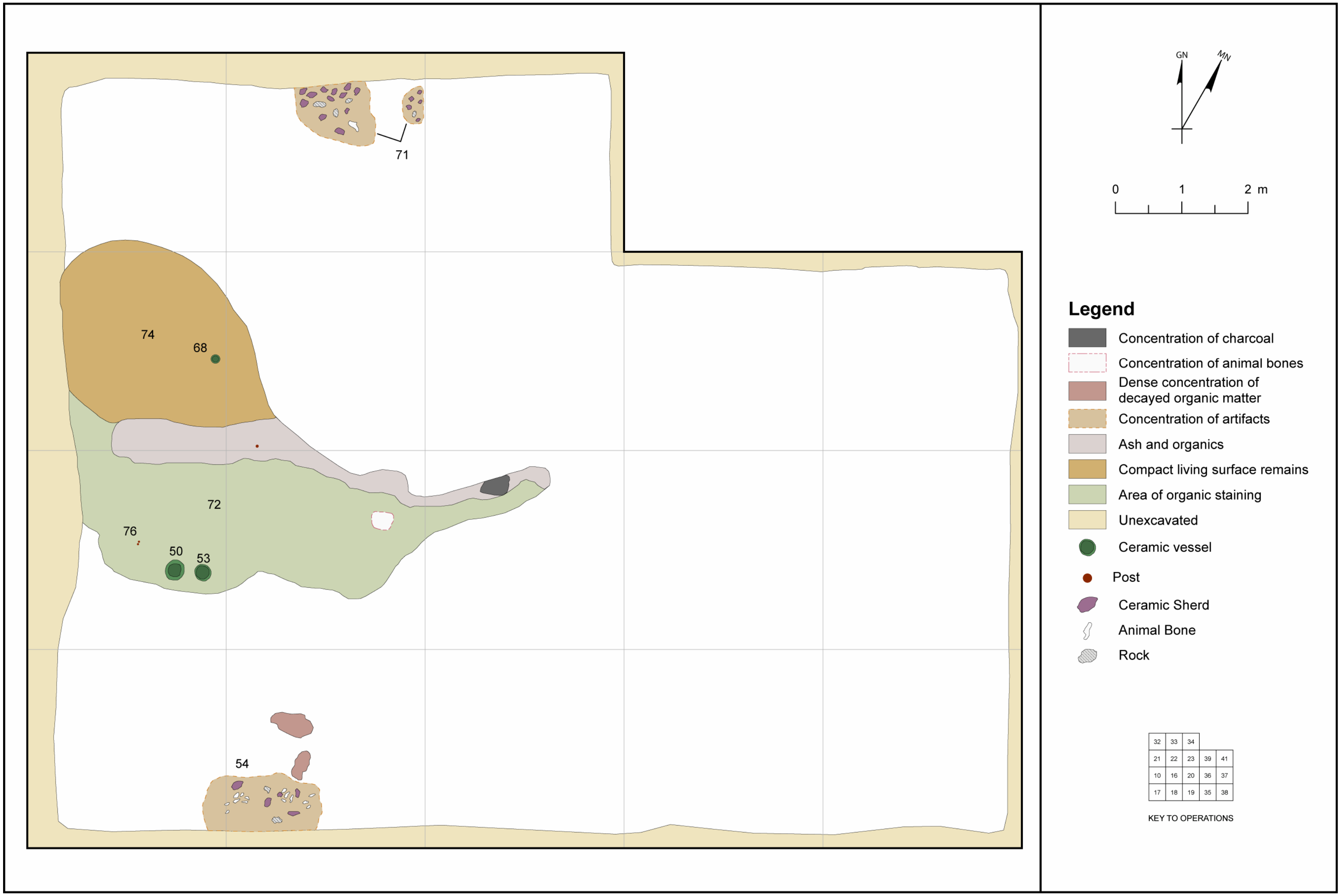

Figure 5.27: Plan view of Excavation Block 3 showing remains associated with Habitation Phase 3B.

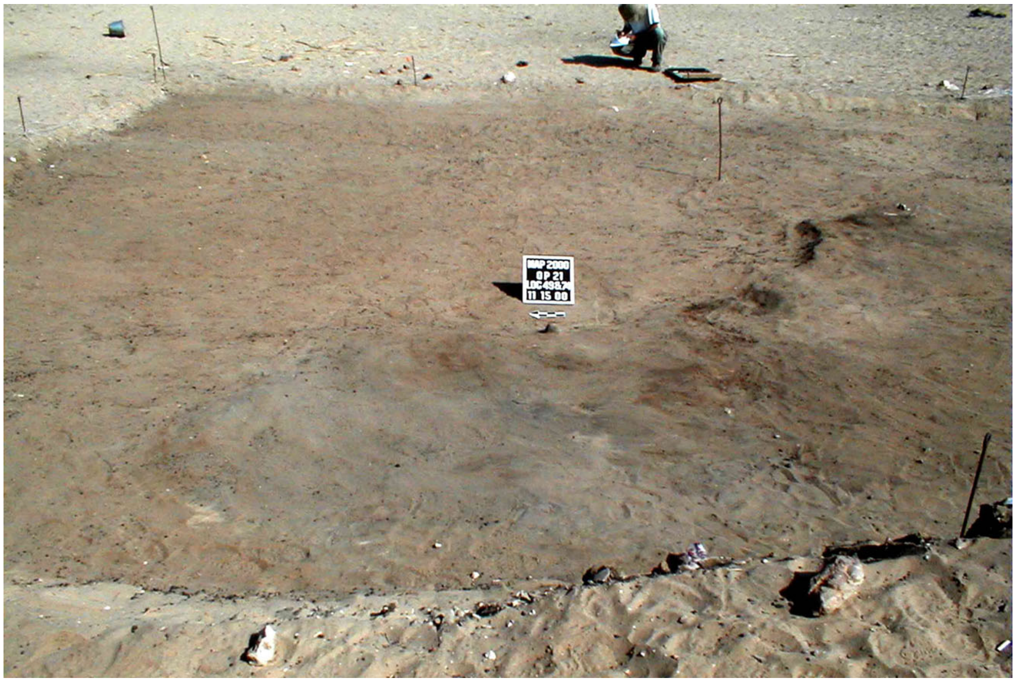

Figure 5.28: View looking east of Excavation Block 3, Habitation Phase 3B showing Locus 74 (bottom center) and Locus 72 (right of center) and Locus 68 (center).

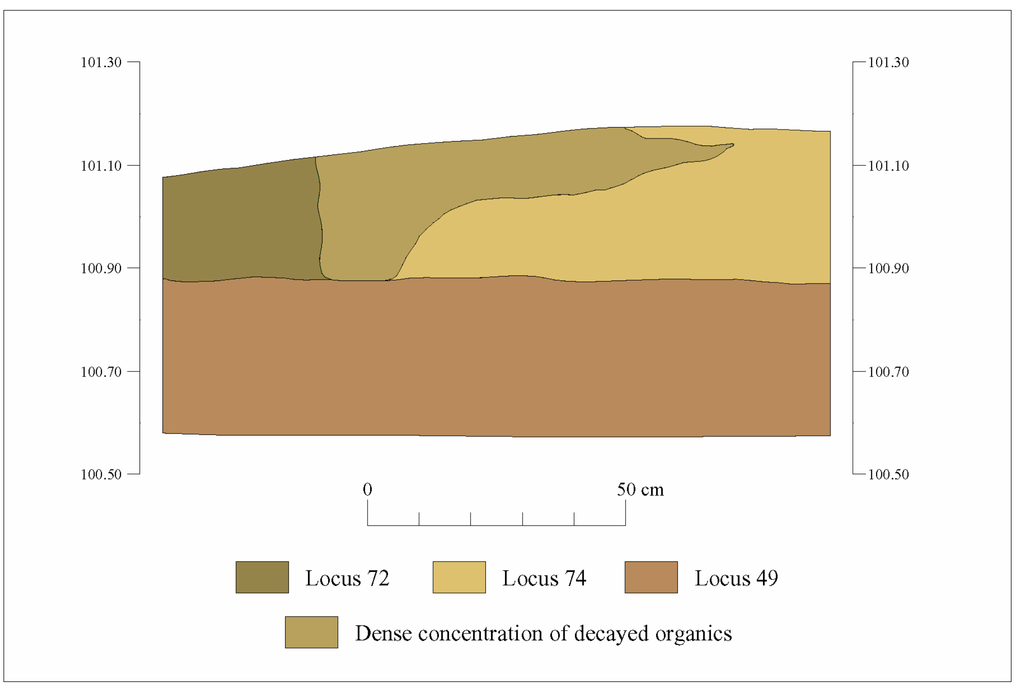

Figure 5.29: Profile of southern end of Locus 74 looking west.

Ceramic Vessel Emplacements: Three ceramic vessels were found associated with, and cut into the Locus 72 and 74 living surfaces and each was assigned individual loci numbers. Loci 50 and 53 were emplaced in small pits located in the southwest quadrant of Locus 72 (Figure 5.27 and Figure 5.30) such that their rims were just above the level of the matrix of Locus 72. Both vessels are classified as Rough ware vessels with each having evidence of use wear and damage. The pits within which they were placed were not much larger in diameter than the vessels themselves and did not contain any other artifacts. These vessels are discussed in more detail below in Section 6.1.

Locus 68 was a small Rough ware vessel with an opening diameter of approximately 7 cm that was found emplaced in the Locus 74 floor deposits (Figure 5.27). This ceramic vessel was exposed at the very end of the day and left in place to be excavated the next day. Unfortunately, it was stolen overnight before any additional information or close-up photographs could be obtained.

Figure 5.30: Loci 50 (back) and 51 (front) *in situ*.
(Note: several levels of surrounding deposits have been removed from the floor level in which these vessels were emplaced.)

Miscellaneous Features: Two miscellaneous features were identified as belonging to Habitation Phase 3B; Locus 54 and Locus 71, both of which are thin, spatially confined concentrations of artifacts. Locus 54 was a scatter of animal bone, ceramic sherds, ash and organic material lying on the surface of Phase 3B along the southern boundary of the excavation block. In plan view, Locus 54 measured 1.79 m east-west, and at least 0.87 m north-south, although the full extent of the feature is unknown.

Locus 71 was assigned to two nearly adjacent areas of surface concentrations of ash and ceramic sherds located along the northern boundary of the excavation block. The largest of the concentrations measured 1.12 x 0.87 m in size while the smaller measured 0.32 x 0.56 m. Neither of these concentrations had any depth.

Chronological Assignation of Habitation Phase 3B: Based on recovered ceramic rim sherds from deposits and features associated with Habitation Phase 3B it would appear that this Phase dates to Naqada IIa-c.

5.2.3.3 Habitation Phase 3C

Habitation Phase 3C was comprised mainly of stratum Locus 49 matrix as described above for both Phase 3A and 3B. The vertical extent of Phase 3C was defined based on the horizontal co-occurrence of several features coinciding with a visible stratigraphic break within the Locus 74 living surface deposits described above. Deposits assigned to this phase occur in all 18 Operations of Block 3 and averaged 21 cm in thickness with a range of 32 cm; the thinnest (2 cm) deposits occurring along the eastern margin of the excavation block and the thickest (34 cm) in the south central area of the block. Artifacts recovered from Habitation 3C deposits include lithic debitage and tool fragments, ceramic sherds and complete vessels, faunal remains, bone awls, ceramic figurine fragments, mud jar stoppers, and a possible mud seal fragment.

Features: Features associated with Habitation Phase 3C (Table 5.3 and Figure 5.31) include wooden posts, three ceramic vessel emplacements, a mud-reinforced post mold, and several areas of artifact concentration. All of these features appear to be related to a living surface associated with a potential large structure (see Section 5.2.3.4 below).

Table 5.3: Summary of features associated with Habitation Phase 3C.

Locus	Operations	Feature Type
73	19	Artifact and Post concentration
74	21,22	Hearth and living surface?
79	22	*Calage de limon et piere/* mud reinforced post mold
82	22,23	Pot
97	39	Pot-large
130	23, 34	Ash and organic stain/concentration

Structural Remains – Living Floors and Posts: The primary living floor remains associated with Habitation Phase 3C are the lower deposits of Locus 74, which was previously described. The portions of Locus 74 assigned to Phase 3C are lower deposits, approximately 18 – 23 cm, which like those in Phase 3B were very compact in nature with a high content of decayed organic matter present.

In addition to the living floor remains of Locus 74, a large mud-reinforced post mold (Locus 79) and a concentration of five wooden posts (associated with Locus 73; see below) were recovered. The wooden posts from Locus 73 ranged in diameter from 4.7 – 6.4 cm and had an average diameter of 5.1 cm. These five posts were tightly cluster in the northwestern quadrant of OP 19 and are in direct association with a small R-ware ceramic cup/bowl (MAP1792; Figure 5.33) found lying upside-down just west of the posts. These posts also appear to be associated with Locus 73 a area of artifact concentration belonging to both Phase 3C and the earlier Phase 3D, which is described in Section 5.2.3.4 below.

Locus 79 is a large mud reinforced post mold or *calage* located in the southwest corner of OP 22 (Figure 5.31).[14] This feature is comprised of thick mud and stones/cobbles that have been packed up against a large wooden post (22 cm in diameter). While the large post that occupied the center of this feature was no longer present, nor was the cavity filled with decayed wood material, the faint impression of wood grain could be distinguished on the inner faces of the near vertical walls of the central opening. At least five other mud reinforced post molds have been identified in Block 3 and are associated with Phase 3D. It is believed that Locus 79 is in fact part of the same structure to which these other features belong, but has been assigned to Habitation Phase 3C based on the elevation of its rim and its being coplanar with the top of the Locus 74

[14] These types of structures have been referred to by Midant-Reynes and Buchez as *calages* (Midant-Reynes and Buchez 2004: 41-48).

Phase 3C deposits. However, it is most likely that it was constructed at the same time as the other large post supports. This feature type is discussed more completely in Section 5.2.3.4 below. A total of 12 ceramic sherds were recovered from among the mud reinforcing and included fragments of Polished red ware, Black-topped red ware, and Rough Ware. Faunal remains recovered from among the mud and stones include a single unidentified specimen.

Ceramic Vessel Emplacements: Three ceramic vessel emplacements were identified associated with Phase 3C. These include Loci 82 (MAP2724) and 97 (MAP2741) as well as vessel MAP2480 associated with the Locus 73 artifact concentration and found just south of the small ceramic cup/bowl (MAP 1792) previously mentioned. Both Loci 82 and 97 are large R-ware vessels. Locus 82 is a large basin with punctate decoration running around the vessel lip. Locus 97 on the other hand is a large jar form. The third vessel emplacement, MAP2480 is a small, fine (< 0.5 cm wall thickness), Black-topped red ware jar with a very worn surface which also has areas of surface exfoliation. All three of these vessels were intentionally placed in tight pits that were not much larger in diameter than the maximum diameter of the vessel itself.

Miscellaneous Features: A single miscellaneous feature, Locus 130, was identified in Habitation Phase 3C. Consisting of a surface concentration of ash and decayed organics, Locus 130 is located along the northern boundary of OP 23. Measuring 1.09 x 0.45 m in horizontal extent, this feature did not extend vertically more than 2-3 cm in thickness and most likely represents sheet midden deposition of materials from a nearby hearth feature located north/northeast of the excavation block. No artifacts were recovered from the feature.

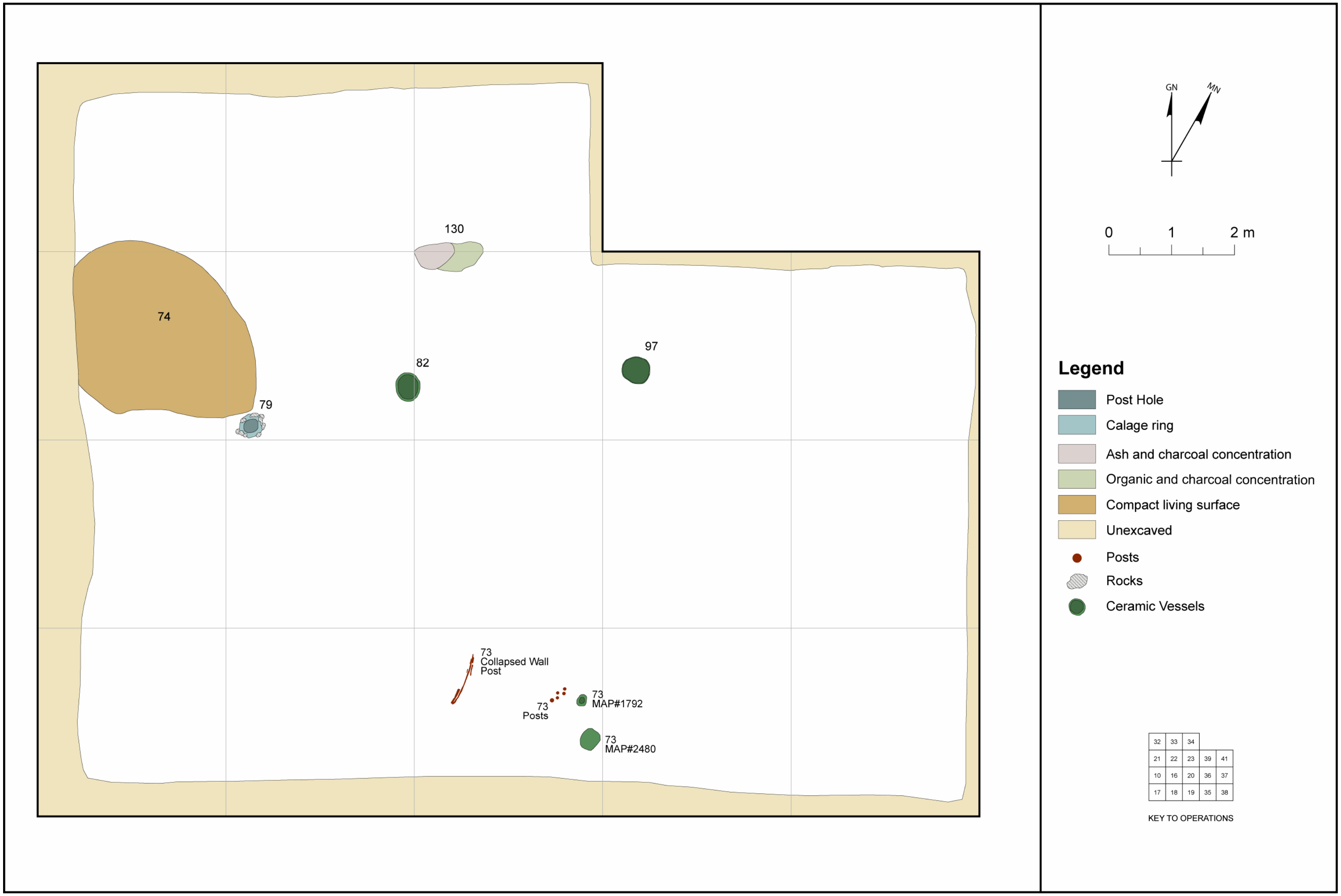

Figure 5.31: Plan view of Excavation Block 3 showing remains associated with Habitation Phase 3C.

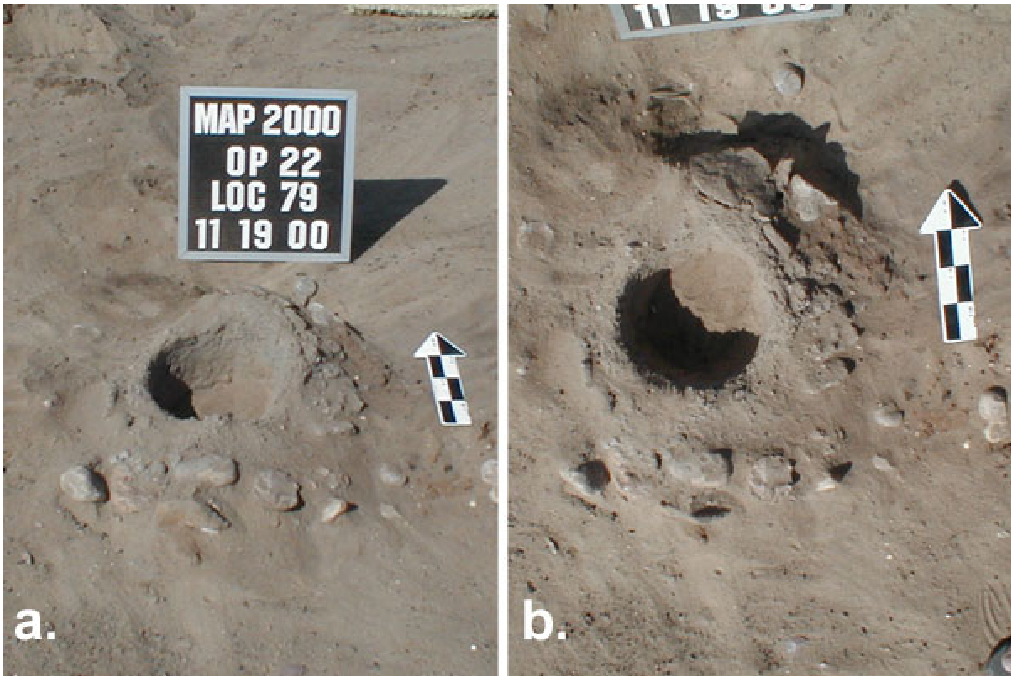

Figure 5.32: Locus 79 shown in (a) oblique view and (b) plan view.

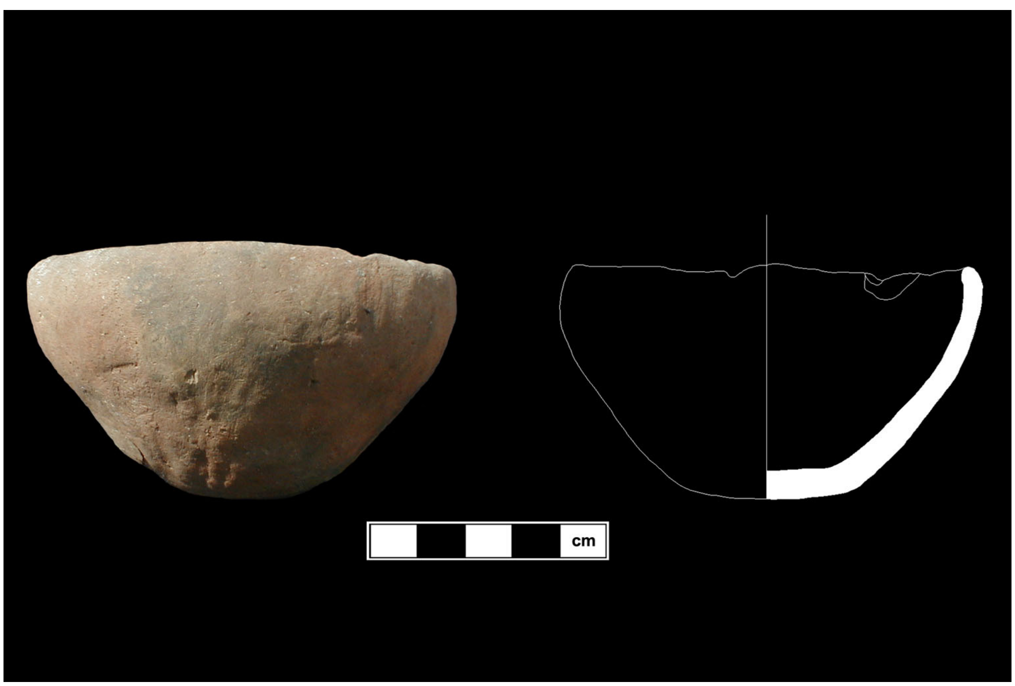

Figure 5.33: Ceramic cup (MAP1792) recovered from the surface of Locus 73.

Figure 5.34: View of (a) Locus 82 and (b) Locus 97 *in situ* in Habitation Phase 3C.

Chronological Assignation of Habitation Phase 3C: Dating of Habitation Phase 3C is based upon an examination of ceramic rim and body sherds as well as the three complete vessels recovered from deposits associated with this Phase. These materials suggest a date of Naqada IIa-b. These materials included two D-ware body sherds, one of which has a depiction of the arm and shoulder of a human or lizard figure (Figure 6.22 [MAP 3331]).

5.2.3.4 Habitation Phase 3D

Habitation Phase 3D represents the earliest occupation phase identified within Excavation Block 3. This phase includes a substantial number of features including both mud reinforced post molds, sections of prepared mud flooring, and the deposits found surrounding and overlying these features. These deposits appear to rest upon a layer of clean yellow sand (Locus 117; Habitation Phase 3E). As will be discussed, these various features appear to represent the partial remains of a large and fairly substantial structure possibly serving a ritual/cultic purpose based upon the artifacts recovered from this phase as well as Excavation Block 3 in general. Deposits associated with Phase 3D are comprised of Locus 49 matrix and averaged 39 cm in thickness with a range in thickness of 14 – 61 cm. Artifacts recovered from Phase 3D represent the greatest diversity of types recovered from any habitation phase investigated during the 1995 and 2000 excavation seasons. These categories include ceramic vessels and sherds, lithic debitage and tools, bone awls, copper and bone needles, groundstone mace head fragments, flint and ivory projectile points, stone and clay beads/pendants, spindle whorls, jar stoppers and lids, stone marbles, and a significantly large assemblage of anthropomorphic and zoomorphic clay figurines and figurine fragments.

Features: Features associated with Habitation Phase 3D (Table 5.4and Figure 5.37) include wooden posts, large areas of prepared mud flooring, mud reinforced post molds, and areas of organic staining.

Table 5.4: Summary of features associated with Habitation Phase 3D

Locus Number	Operations	Feature Type
73	19	ceramic vessel and posts
86	20	*Calage en pot/*Pot-broken
95	16,17,18,20,23	Mud flooring consisting of hard mud/plaster areas with cobbles
102	36	*Calage en pot*/Pot-broken
105	20	*Calage de limon et piere*/ Mud-reinforced post mold
106	16	*Calage de limon et piere*/ Mud-reinforced post mold
112	16	*Calage de limon et piere*/ Mud-reinforced post mold
113	18	*Calage de limon et piere*/ Mud-reinforced post mold
114	19	*Calage de limon et piere*/ Mud-reinforced post mold
115	36	Basket remains
116	19	Organic stain with Wood and mud mass in wall of operation

Structural Remains –Floors: The primary feature type identified for Habitation Phase 3D is a combination of remnants of prepared mud flooring with or without preserved post holes. The Locus numbering scheme used for these features involved assigning Locus 95 to the areas of prepared flooring and assigning another unique locus number to each of the post hole cavities identified. Seven large, reinforced post holes were identified associated with areas of mud flooring, while one additional posthole did not have any associated mud flooring. These mud-reinforced post holes have been referred to as "chocks" or *calages* by Midant-Reynes and Buchez (2002:41-48) at Adaïma, where they define three types based upon the materials used for the "chocking". As can be seen in Figure 5.37, areas of mud flooring were identified in nearly every portion of the excavation block.

Assigned Locus 95, these mud flooring areas consist of a combination of a gray to light gray, thick, hardened sandy silt matrix containing pebbles, cobbles, and sub-angular rock fragments (Figure 5.38 and Figure 5.39). Also occasionally found among the inclusions are ceramic sherds and lithic debitage. The areas of flooring were created by first excavating a depression in the underlying deposits in which a mud and stone mixture was placed. In cases where a post was to be erected, it appears as though a preliminary layer of the mud mixture was placed in the area of the post and allowed to partially harden, prior to filling in the remaining portion of the depression with the mud mixture. In at least one case (Locus 114), a larger flat rock was placed on top of the initial mud layer in the location of the post as an added support/stable surface on which to rest the bottom of the post. Whether a post was present or not, the upper surface of the mud mixture was roughly smoothed and in a few places partial hand impressions and finger channeling could be seen. It also appears as though larger rock fragments were intentionally pressed down into the mud and "smeared" over to provide for a more even finished surface. Also, in at least one location, there is evidence to suggest that these areas of mud surface may have been painted or washed with a white pigment.

Structural Remains – Reinforced Post Holes/*Calages*: In analyzing the results of their extensive excavations at the Naqada IC-IIID settlement at Adaïma, Midant-Reynes and Buchez have defined a feature type they refer to as a *calage* or "chock" (Midant-Reynes and Buchez 2002:41-48). These features are the result of intentional chocking or wedging placed against or around posts to add structural support because of the loose, sandy make-up of the underlying deposits present at Adaïma. Based on the composition of the materials used for the "chocking", they define three primary types: 1) *calages en pot*, 2) *calages en limon*, and 3) *calages en pierres* (Midant-Reynes and Buchez 2002:41). Type 1 *calages* are distinguished by the use of a ceramic vessel placed in a depression and surrounded by compacted silts/mud and filled with silts. Type 2 *calages* are characterized by a hole or depression that was filled with mud packed around a vertical post which is no longer present. The resulting hole caused by the removal/decay of the post is filled with silts and sands. Midant-Reynes and Buchez further distinguish two subtypes of Type 2 (2a and 2b) primarily based on the diameter of the post cavity as well as slight differences in the composition of the mud used in the construction (2002: 44-45). Type 2a *calages* are defined as an accumulation of gray-brown silt with off-white concretions present where the post holes vary from 15 to 35 cm in diameter (Midant-Reynes and Buchez 2002:44). Type 2b *calages* are defined as generally having a smaller post diameters (10 – 20 cm) with a mud mixture lacking the concretion inclusions and having a composition of varying amounts of sand and silt (Midant-Reynes and Buchez 2002:46). The final type of *calage,* Type 3, is comprised entirely of stones with no surrounding mud/silt matrix (Midant-Reynes and Buchez 2002:41). At Adaïma, these defined types cover all of the posts where reinforcement is present. Based on information provided in the Adaïma publications, the average post diameter for which a *calage* was constructed is 19.22 cm with posts ranging from 9 –37 cm (Midant-Reynes and Buchez 2002:42-47).[15]

In addition to Midant-Reynes and Buchez's three types, and based on the remains uncovered at el-Mahâsna, I propose a fourth type of *calage*, Type 4: *calage en limon et pierres*, or chocking of silt (mud) and stones. Type 4 is defined based on the chocking material being comprised of a sandy silt mud mixed with pebbles, rounded cobbles, and sub-angular rock fragments, with the occasional inclusion of ceramic sherds and lithic debitage. This type of *calage* occurs with the highest frequency at el-Mahâsna accounting for six of the eight identified *calages* found in Block 3. The reason for the addition of larger rock fragments to the mud mixture may have been an increased need for added support to the posts given the rather loose, sandy deposits that underlie Habitation Phase 3D (see Section 5.2.3.5 below)

Seven *calages* have been identified in Block 3 and are associated directly with Habitation Phase 3D. These can be seen in Figure 5.37 and information concerning post diameter and *calage* type has been summarized in Table 5.5. I have chosen to include Locus 79 in this discussion of the large reinforced post holes associated with Habitation Phase 3D since it is apparent that this post hole is also associated the same structure for which the other seven post holes were constructed. Of the eight *calages* identified from the Block 3 structure, the average post size is 25.75 cm in diameter and ranged in diameter from 19 – 36 cm. *Calage* types identified in Block 3 include only Type 1 and Type 4 calages, with Type 1 being represented by two examples, Loci 86 and 102. Locus 86 consists of a substantial portion of an R-ware vessel embedded in a matrix of mud mixed with "chunks" of dried, consolidated mud. Unlike Locus 102, Locus 86 was not directly associated with a larger portion of mud flooring; Locus 95. Like

[15] The average post diameter was calculated based on information provided for 23 *calages* where the diameter of the post was given.

Locus 86, Locus 102 was also constructed from a sizable fragment of a R-ware vessel, this time embedded in a large portion of Locus 95 mud flooring. In both cases, the ceramic vessel fragments were used in conjunction with surrounding mud mixture to provide support for large posts. Further, the posts associated with these calages were removed at some point in the past, as there were no remnants of decayed wood present, but rather the holes themselves had been in-filled with silts and sands.

The remaining *calages* from Habitation Phase 3D can be defined as the Type 4 variety. Each of these calages is directly associated with areas of Locus 95 mud flooring. The post cavity in these cases varied from those with nearly vertical sided walls (Locus 105 [and Locus 79 discussed above]) to those with walls which out-sloped in their lower portion and then became nearly vertical (Locus 112), and finally to those where the walls essentially out-sloped for the entirety of their depth (Locus 114). In each of the *calages* examined, no substantial evidence for decayed wood was identified during excavation of the cavities, though as in Locus 79, there were instances where the negative impressions of what appear to be wood grain could be seen on the interior walls of the post cavities. In all cases, it appears that the identified large postholes (including Locus 79) are all associated with a large, substantially built structure.

In order to compare this large structure to that identified in Block 1, the mean difference in post diameters was examined. A total of 13 post diameters (both those with *calages* and without *calages*) from Block 3 and 52 posts (all without *calages*) from Block 1 were compared. Posts from the Block 3 Structure are nearly 14 cm (13.9 cm) larger in diameter on average than those from the Block 1 Structure. This observed difference is quite strong and very significant ($t = 7.888$, $df = 63$, $p < 0.00000000005$) suggesting that larger timbers were purposely chosen for the construction of the Block 3 Structure. This can be seen graphically in Figure 5.35 where it is clear that post diameters from Block 3 are skewed toward those with larger diameters, where, with the exception of a few outliers, those from Block 1 are skewed to posts with smaller diameters.

Comparison with structural post remains from Block 8 (see 5.2.8.1 below) reveals a similar pattern. Posts from the Block 3 Structure are 7.39 cm larger on average than those from Block 8, which while not as strong of a difference than seen above, it is still significant ($t = 1.745$, $df = 19$, $p = 0.097$). This weaker, less significant difference is most likely related to the fact that the structure in Block 8 is also constructed using larger posts than Block 1 as well as the use of *calages* (Type 2b) indicating a greater investiture of energy in its construction, but still not as great as that used in the building of the Block 3 Structure.

The nature of the construction of the Block 3 Structure was further investigated through a comparison between the size of posts associated with *calage* features from this structure and all the posts from *calage* features identified at Adaïma. As can be seen in Figure 5.36, the post holes from this structure, while ranging from 19 – 36 cm in diameter, tend to be skewed toward the upper end of the distribution. This is in comparison to those recovered from Adaïma, where post diameters tend toward the lower end of their range. A further comparison of the mean diameter of post holes from Block 3 with those associated with *calages* at Adaïma reveals a significant difference, with those at el-Mahâsna being 6.53 cm larger in diameter on average (t = 2.491, df = 29, p = 0.018715). This would suggest that the structure in Block 3 may have been more substantial than those at Adaïma or that the individuals who constructed the Block 3 Structure at el-Mahâsna had greater access to larger diameter wooden beams than did Adaïma inhabitants and were purposely selecting for them.

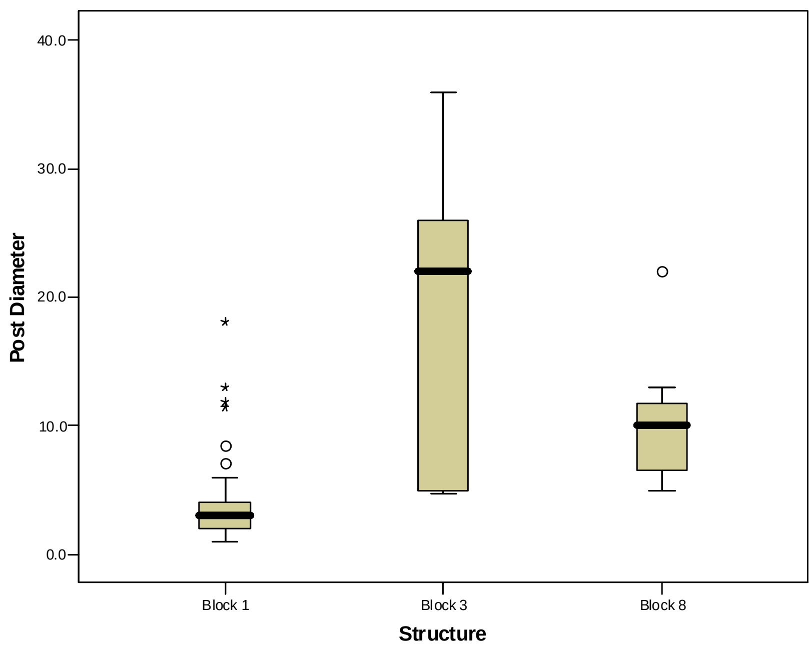

Figure 5.35: Box-and-Dot plot showing the comparison of post diameters from structures in Excavation Blocks 1, 3, and 8.

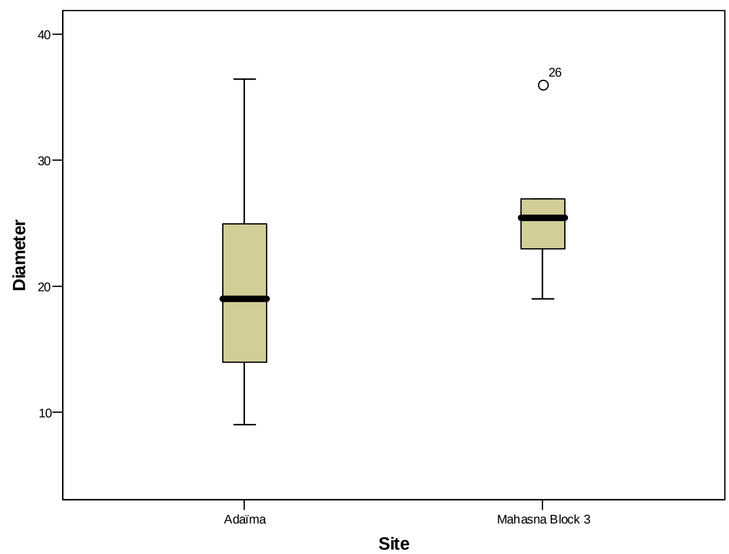

Figure 5.36: Box-and-Dot plot showing the comparative distribution of post diameters associated with *calages* at Adaïma and Block 3 at el-Mahâsna.

Table 5.5: Summary of post holes associated with *calages* present in the structure in Excavation Block 3.

Locus	*Calage* Type [a]	Post Hole Diameter (cm)	Summary Statistics for Posts	
			Statistic	Value (cm)
79 [b]	4	22	Mean:	25.75
86	1	27	Minimum:	19
102	1	36	Maximum:	36
105	4	19	Std. Dev.:	4.95
106	4	26		
112	4	24		
113	4	25		
114	4	27		

[a] These types are based upon a modified version of those defined in Midant-Reynes and Buchez 2002:41-48.

[b] Locus 79 has been included in this table and the calculation of the statistics since it is clearly apparent that it belongs to the same structure/building as the other seven *calages* associated with Habitation Phase 3D.

In addition to the structural elements associated with Block 3 Structure, it must be noted that a significant quantity of artifacts were recovered from those deposits directly overlying and surrounding the mud flooring and *calage* remains. Of particular note is the large number of in-situ grinding stone remains (both quern fragments, *manos* and pestles) found lying on/next to Locus 95 materials in Operations 16, 18, 19 and 20 (see Section 6.5.5 for a further discussion of the distribution of these items).

Miscellaneous Features: Other features associated with Habitation Phase 3D include Locus 115, the remains of the bottom of a basket, and Locus 116, a dense concentration of ash and organic material located along the southern edge of Operation 19 (Figures Figure 5.37and Figure 5.40).

Chronological Assignation of Habitation Phase 3D: Based on an examination of ceramic rim sherds, and select body sherds, Habitation Phase 3D appears to date to the Naqada Ic-IIab. These materials included the recovery of 11 fragments of C-ware vessels (eight rim and 3 body sherds) and a single D-ware body sherd.

5.2.3.5 Habitation Phase 3E

Habitation Phase 3E has been assigned to the deposits directly underlying those making up Phase 3D. While exposed in many of the operations comprising Excavation Block 3, Stratum Locus 117 was only excavated in Operations 16 and 20, where a minimal amount of deposits were removed. Averaging 9.2 cm in thickness, deposits excavated from Locus 117 ranged from 4 –14 cm in thickness. These deposits were composed of a very pale brown, homogeneous, fine sand layer containing very few inclusions of rocks or artifacts. Artifacts recovered include a small amount of lithic debitage, approximately 30 small animal bone fragments, ten ceramic sherds, and four unbaked clay figurine fragments; two cattle figurines and two unidentified fragments.. Based on an examination of the surface of this stratum as well as the artifacts recovered from the two excavated areas, it is believed that Locus 117 is primarily a culturally sterile layer and that the artifacts recovered from this stratum represents items that migrated down from the overlying Locus 49 materials through natural means. Unfortunately since excavations did not proceed further beyond this level, it is not know whether these Locus 117 deposits represent a natural, basal deposit present prior to Predynastic occupation of the site area, or a naturally deposited layer of sand accumulated during a period of abandonment of el-Mahâsna. A further possibility is that these deposits may represent an intentional deposit of clean sand as a way to ritually purify the area prior to the construction of the large structure.

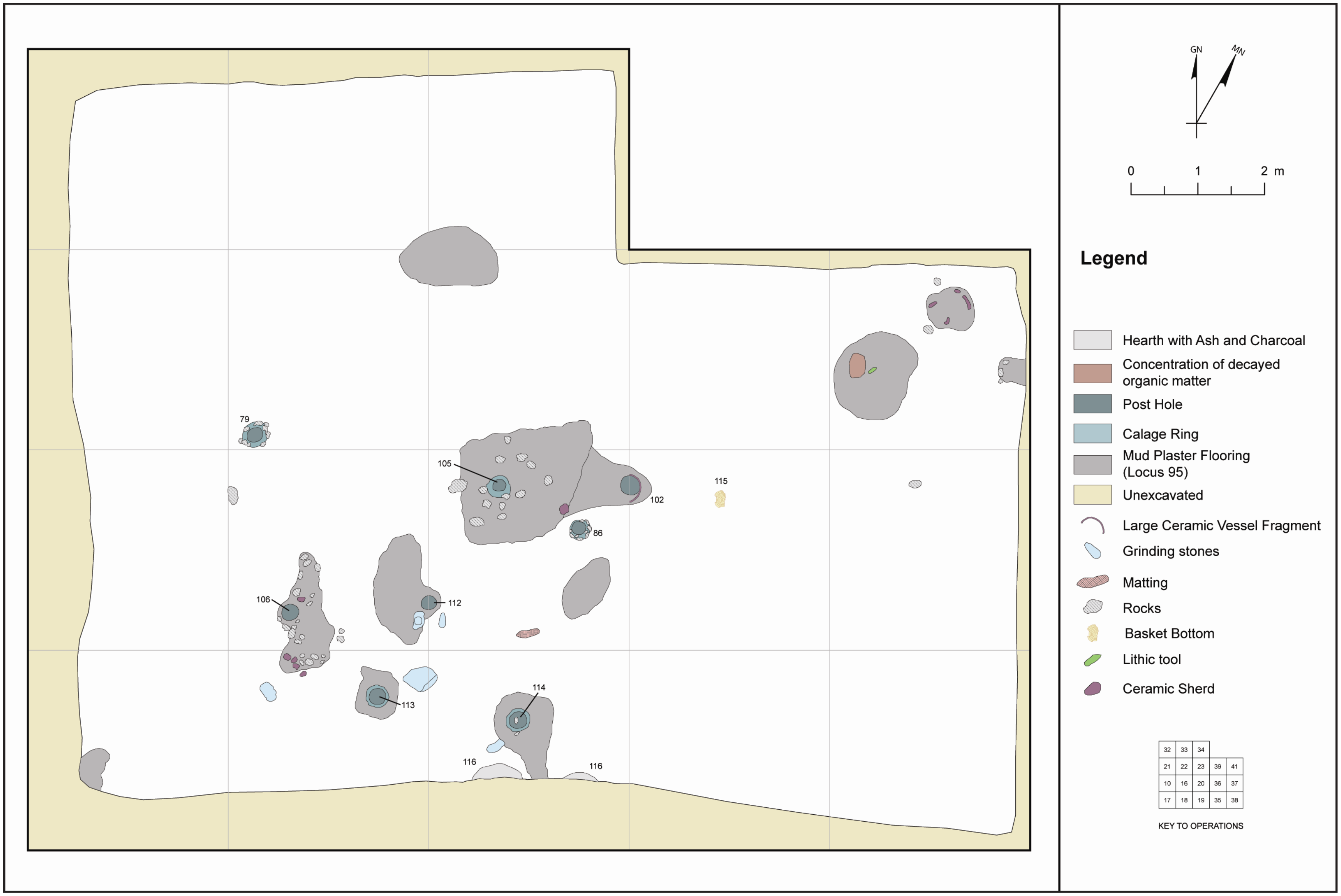

Figure 5.37: Plan view of Excavation Block 3 showing remains associated with Habitation Phase 3D.

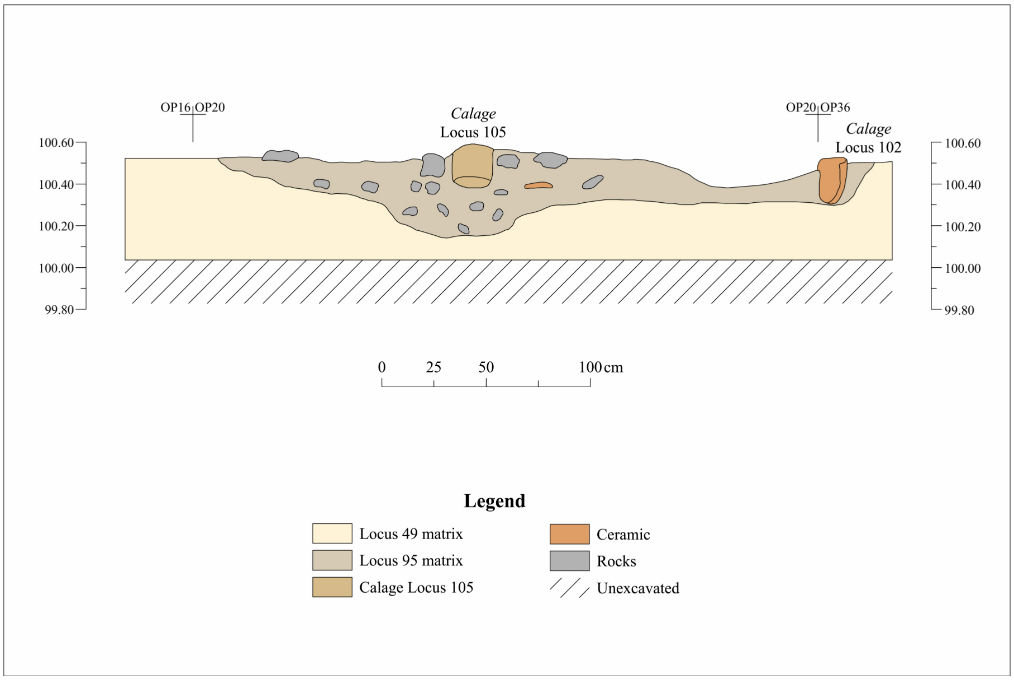

Figure 5.38: Cross Section of Locus 95 in OP 20 looking north showing internal structure of the areas of mud flooring and two types of *calages*.

Figure 5.39: View of Locus 95 and 105 in OP 20 looking south.

Figure 5.40: Locus 115.

5.2.3.6 Excavation Block 3 Summary

Remains uncovered in Block 3 appear to represent a large, substantially constructed building. These remains included eight large postholes and numerous areas of compacted mud and stone flooring. The various postholes appear to have held large wooden posts at one time, and formed at least two parallel walls along with two possible internal supports. Deposits in this area appear to be directly related to the use of the structure and seem to reflect a possible ritual or cultic function to the structure as will be discussed further below.

5.2.4 Excavation Block 4

Excavation Block 4, consisting of Operations 14, 15, 24, 25, 27, and 28, measures 6 x 9 meters in size. Positioned near the western margin of the site area (Figure 5.2), Excavation Block 4 was located here in order to investigate an area of decreasing surface sherd density to the west of the large concentration surrounding Excavation Block 3, as well as to investigate the area adjacent to where it appears that Garstang focused his efforts and revealed a possible structure and activity zone (see Figure 3.10). The ground surface is essentially level and located just west of a zone of undulating surface that appears to be both the location of Garstang's excavation dump, and potentially one of the "mound" areas subjected to *sebbakh* digging noted by Garstang, and shown on his map (Garstang 1903:6 ; Plate II).

Excavations within Block 4 resulted in the removal, on average, of 49 cm of Predynastic period deposits. Ranging in depth from 45 cm to 55 cm, excavations in Block 4 removed an estimated 26.19 m^3 of deposits. Analysis of the excavations in Block 4 have resulted in the identification of three primary Predynastic period habitation phases (Figure 5.41) containing pyrotechnic features (i.e. hearths/ash pits), and living surface remains, in addition to several wooden posts.

Categories of artifacts recovered from Block 4 include ceramic sherds, lithic debitage and tool fragments, faunal remains, bone tools, beads, figurine fragments, ostrich eggshell, groundstone, and wood.

5.2.4.1 Habitation Phase 4A

Habitation Phase 4A is the uppermost phase identified in Block 4 and encompasses both Locus 2, the natural desert surface materials, as well as the upper portions of Locus 47. Locus 47 is a stratum of dark, organic rich, fine sands and silts resulting from Predynastic habitation debris and midden deposits (Figure 5.42). Averaging 10 cm in thickness, Habitation Phase 4A deposits ranged in thickness from as few as 7 cm along the boundary between Operations 24 and 27 to as much as 15 cm at the far southern edge of the block. Categories of artifacts recovered from Phase 4A Locus 47 material include ceramics, lithic debitage and tool fragments, faunal remains, shell, an unidentified, unbaked, clay figurine fragment, and a small stone bead.

Running roughly north-south along the western quadrant of the excavation block and originating during Habitation Phase 4A is Locus 48 (Figure 5.43). This locus appears to be a trough-like feature averaging 109 cm in width and 17 cm in depth. The matrix of Locus 48 is characterized by light, yellowish brown fine sand containing lesser amounts of ash and charcoal than the surrounding matrices of Loci 47 and 78. Artifacts recovered from Locus 48 include animal bone, shell, ceramics, lithic debitage and tool fragments.

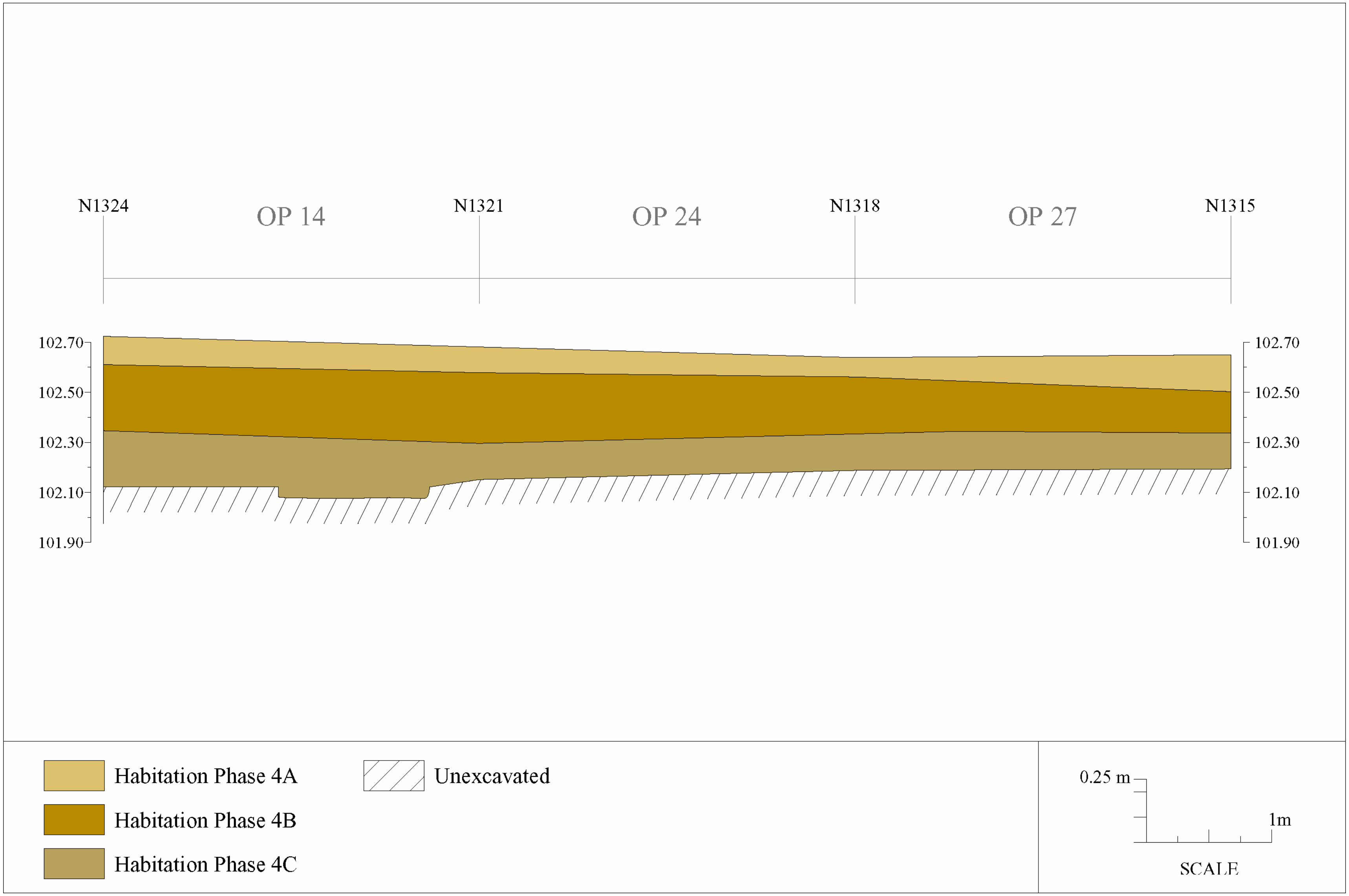

Figure 5.41: Schematic north-south profile showing the relative thickness of the individual Habitation Phases in Excavation Block 4.

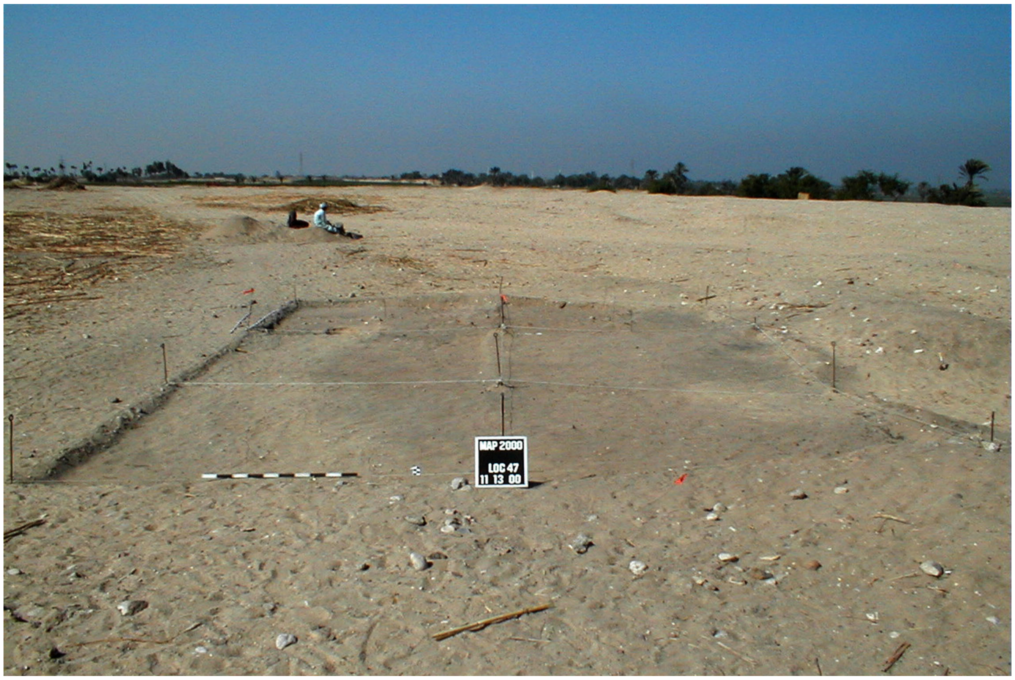

Figure 5.42: General view of the area of Excavation Block 4.
Note the darker nature of the Locus 47 remains.

Paralleling and located between Locus 48 and the western edge of the excavation block is Locus 78, a long, linear feature comprised of pale brown sands with ash and charcoal fragments. Given its location along the edge of the block, it was not possible to determine if this feature was a “ditch” or “trough” like Locus 48 or the eastern edge of an adjacent living surface. Nevertheless, based on the profile shape of Locus 48 and that its apparent cut into Locus 47, Locus 78 is most likely is an adjacent living surface. Artifact densities from Locus 78 were lower than Locus 47 and included ceramic sherds, faunal materials, and lithic debitage.

Chronological Assignation of Habitation Phase 4A: Ceramics recovered from Habitation Phase 4A suggest that this phase dates to the Naqada IIa-b.

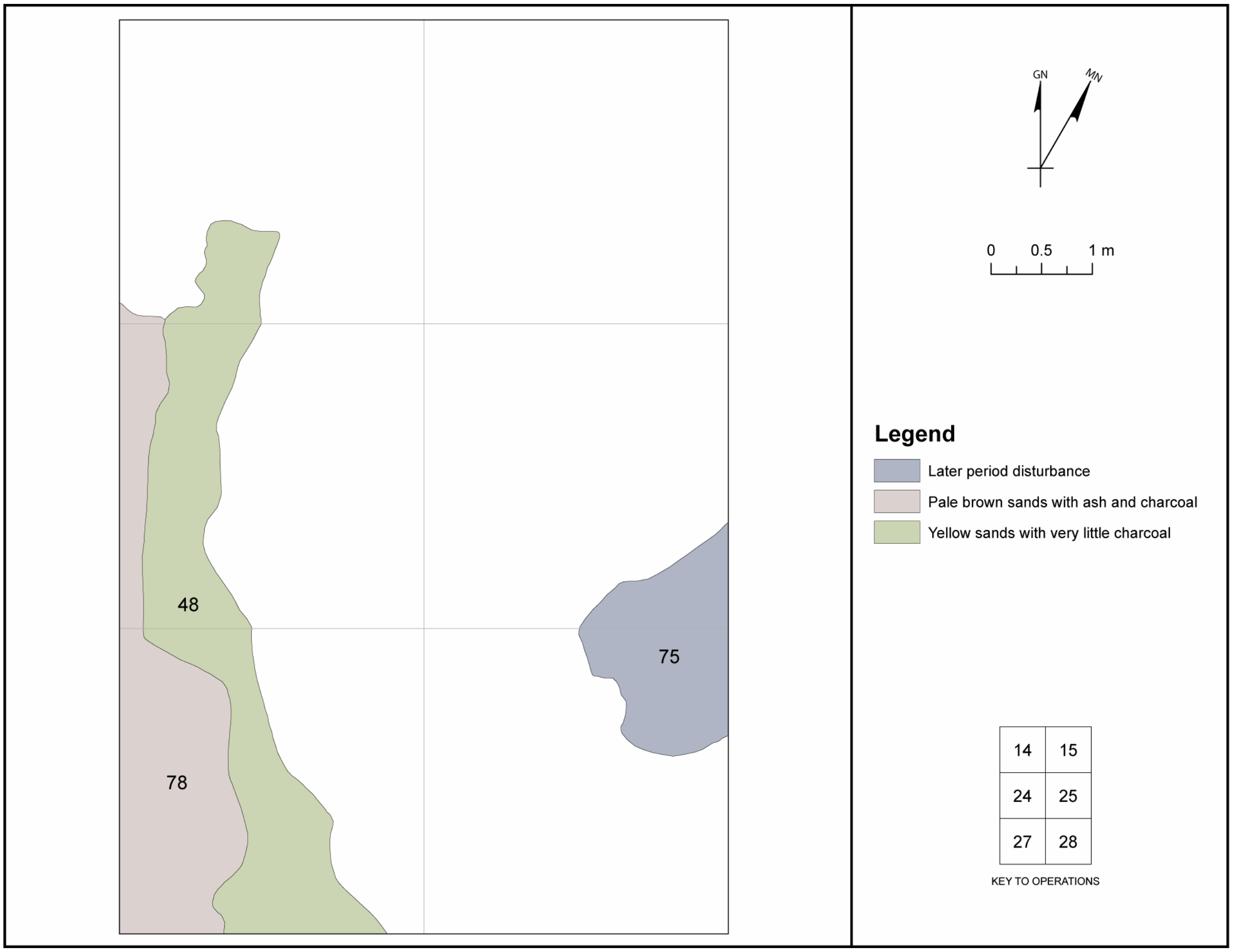

Figure 5.43: Plan view of Habitation Phase 4A showing the locations of associated features.

5.2.4.2 Habitation Phase 4B

The primary matrix comprising Habitation Phase 4B deposits is made up of portions of Loci 47 and 78 as in Phase 4A just discussed. These deposits ranged in thickness from as few as 17 cm at the southern end of the excavation block to as much as 28 cm along the boundary between OPs 14 and 24. The average thickness of Phase 4B deposits was 24 cm. The upper surface of Phase 4B was defined based upon the occurrence of three features, Loci 55, 56 and 57; all occurring on roughly the same horizontal plane (Figure 5.44).

Locus 55 was a small concentration of broken ceramics and organic staining located in the southwestern corner of OP 14. Measuring 20 x 28 cm in planview. While having a maximum depth of approximately 11 cm, Locus 55 had an amorphous shape in profile, and appears to represent either a shallow pit feature originating from a possible living surface. Artifacts recovered from Locus 55 consisted solely of 12 ceramic sherds.

Locus 56, located slightly over one meter to the north of Locus 55, was a shallow (< 5 cm in depth) hearth feature composed of gray to dark gray sands containing a high concentration of ash and charcoal particulate material. Having distinct edges and measuring 50 x 54 cm in plan view, Locus 56 demonstrated no internal structure or apparent intentional preparation of a formal pit prior to use. Combined with a lack of evidence for thermal alteration of the surrounding matrix, the character of Locus 56 suggests that it represents an ephemeral hearth feature, similar in nature to Type A hearths as defined by Tristant (2004:98). No artifacts were recovered from the feature.

Locus 57 was a large area of dark sands having a high ash and charcoal content. Measuring at least 1.43 x 1.16 m in size, this feature is situated in, and extends beyond, the northeast corner of the excavation block. This feature did not appear to have any internal structure and was less than 10 cm in maximum thickness. Artifacts recovered from Locus 57 include lithic debitage, 36 ceramic sherds, and 28 animal bone fragments (9 fish, 3 mammals, 4 turtle, and 12 unidentified).

Finally, the only other features associated with Habitation Phase 4B include 10 wooden posts (Figure 5.44). Posts in Excavation Block 4 varied in diameter from 3 cm to 5 cm with a mean diameter of 3.9 cm, and were not associated with *calage* structures. No apparent structural pattern can be discerned from the locations of the posts. However, given the close proximity of the structure recovered by Garstang just west of this excavation block (Figure 3.10; Garstang 1903: plate IV) it is likely that these posts are associated with that structure.

Chronological Assignation of Habitation Phase 4B: As with Phase 4A discussed above, recovered ceramics from Phase 4B suggest that it dates to the Naqada IIa-b.

5.2.4.3 Habitation Phase 4C

Locus 47 forms the basal matrix of deposits comprising Habitation Phase 4C and differs very little from that described above for the stratum. Loci 48 and 78 are no longer present along the western margin of the excavation block, and Locus 47 horizontally extends across the block, with the exception of feature areas to be described. As with Phase 4B above, the upper boundary of Habitation Phase 4C was defined based upon the co-occurrence of several features across the same horizontal plane as well as a slight, recognizable compaction to the Locus 47 materials at this depth which may represent a living surface. All six of these features are associated with pyrotechnic activities and include hearths and areas of ash disposal. Artifacts recovered from Habitation Phase 4C include ceramics, lithic debitage and tool fragments, faunal remains, clay figurine fragments and wood.

Locus 83 was a 7 cm thick, circular concentration of consolidated ash and fine sands located in the northeastern quadrant of Operation 14 (Figure 5.45). Very dark grayish brown in color and roughly 25 cm in diameter, this feature was bowl-shaped in profile and had no apparent internal structure. Artifacts recovered from Locus 83 include a small amount of lithic debitage, and a single unidentified animal bone fragment.

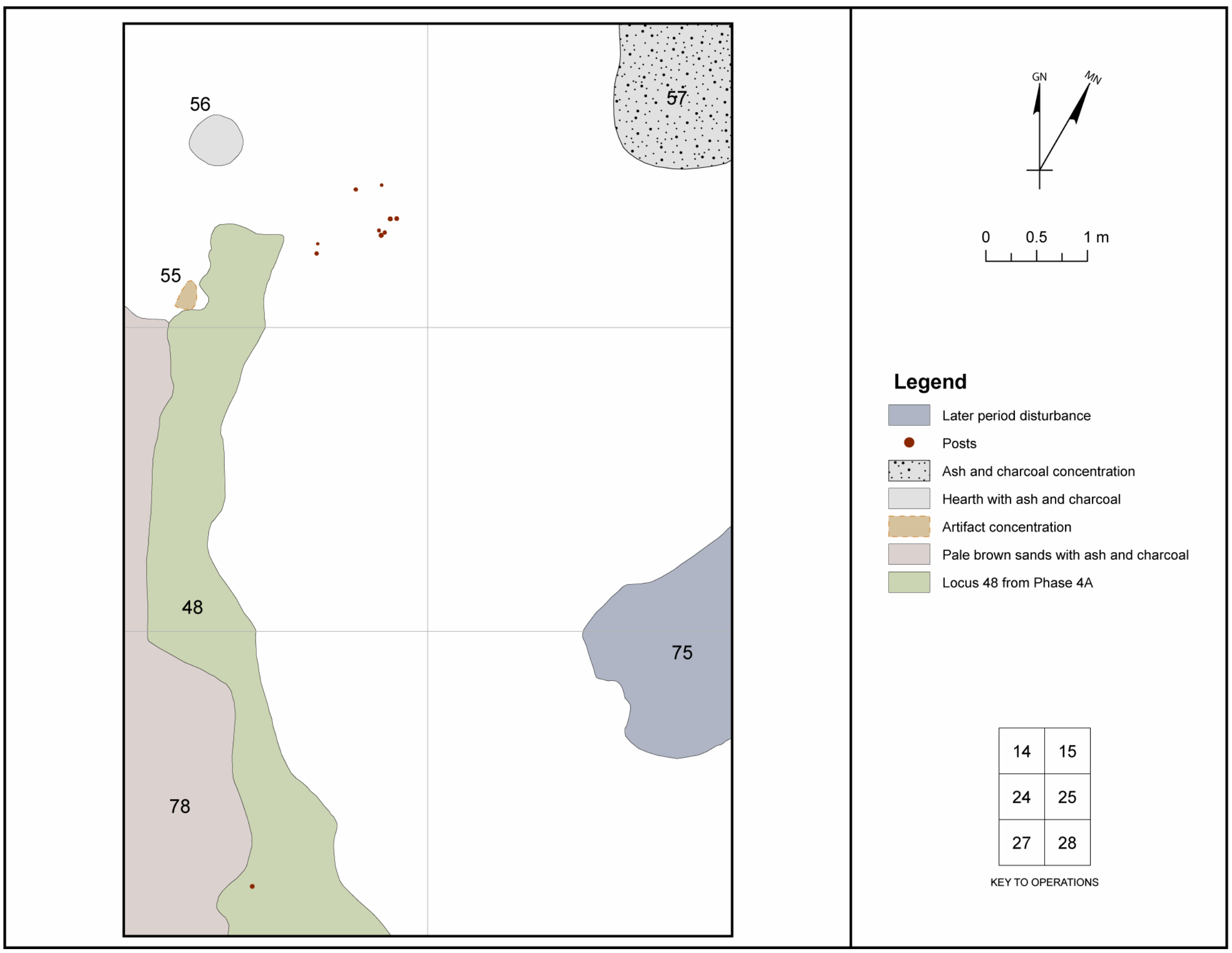

Figure 5.44: Plan view of Habitation Phase 4B showing the locations of associated features.

Locus 85 was a large irregular shaped stain in the southeastern quadrant of OP 14 and extending into OP 15 to the east (Figure 5.45). The matrix of Locus 85 consisted of a very dark gray to black consolidated ash and sand mix measuring roughly 1.23 m in maximum length and 0.96 m in maximum width. In profile, this feature extended to a maximum thickness of 5 cm and had no evidence for any internal structure or differentiation of the deposits. Artifacts recovered are minimal and include a single R-ware body sherd, a few pieces of lithic debitage, and six unidentified fragments of animal bone. Based on the nature, size, and shape of Locus 85, it appears to represent an accumulation of ashy midden material upon the Habitation Phase 4C living surface.

Situated along the eastern boundary of Excavation Block 4 is Locus 96, a very large stain/midden area measuring at least 3.8 x 1.4 m in horizontal extent (Figure 5.45). Very dark grayish brown in color the matrix of Locus 96 is characterized by fine sands with a very high ash content as well as a dense charcoal lens near the northern end of the feature. This charcoal lens is only 6 cm in thickness and appears to be re-deposited rather than originating *in-situ*. Locus 96 deposits average 19 cm in depth and appear to represent an area of ash/trash disposal. The east-west horizontal extent of the feature is unknown, and the southern end has been impacted by later disturbance (Locus 75; see below). Artifacts recovered from Locus 96 include lithic debitage and tool fragments, 115 ceramic sherds, 50 fragments of faunal remains (including primarily fish [n = 8] turtle [n = 4] and sheep/goat [n = 1]), a horn fragment from a clay animal figurine, and a small, rectangular shaped, fired clay object.

Locus 99 is located in the far southern end of Operation 27 and measures 1.67 m east-west and at least 0.81 m north-south, although the full southern extent of the feature is not known. Comprised of grayish brown ashy sands, Locus 99 is basin shaped in profile and has a maximum depth of 23 cm. While the pit had a very high concentration of ash material, no charcoal was observed, nor was any internal structure apparent. Recovered artifacts from Locus 99 include 34 fragments of faunal remains (including fish [n = 17], sheep/goat [n = 1], and turtle [n = 3]), lithic debitage and tool fragments, ceramic sherds, and a single unidentified, unfired clay figurine fragment.

Locus 100, located just northwest of Locus 99, was a large, roughly oval-shaped pit containing a matrix of grayish brown ashy sand with a notable lack of charcoal. Measuring 1.52 x 0.83 m in plan view, Locus 100 was basin shaped in profile with a maximum depth of 24 cm.

Aside from a perceptible compaction of the sands forming the sides and bottom of the pit, no internal structure was apparent. Artifacts from Locus 100 consist of a small amount of lithic debitage and ceramics, as well as 16 fragments of faunal remains which include 4 specimens of fish and a single specimen of domestic pig (*Sus domesticus*).

The last feature identified in association with Habitation Phase 4C is Locus 101, a hearth located in the northern portion of Operation 27. Composed primarily of grayish brown ashy sand, Locus 101 measured 1.26 x 1.04 m in plan view and was basin shaped with a maximum thickness of 18 cm. Internal structure of Locus 101 consisted of a layer of pebbles and cobbles lying upon the base of the feature surrounded by dark brown and rubified sands. In the northern half of the feature, approximately 5-8 cm from the top was a thin lens of charcoal. Based on the internal structure of the feature, it appears to be an *in-situ* hearth associated with the Phase 4C living surface. Artifacts recovered include minimal amounts of ceramic, lithic debitage, and faunal remains.

Chronological Assignation of Habitation Phase 4C: Ceramic rim sherds examined from Habitation Phase 4C indicate that this phase dates to the Naqada Ic-IIab.

5.2.4.4 Post-Predynastic Remains

The Predynastic period deposits in Excavation Block 4 were impacted by a single later period intrusive feature. Locus 75 was located along the eastern edge of the excavation block in the area of the boundary between Operations 25 and 28 (Figure 5.44 and Figure 5.45). Consisting of a light yellowish sand matrix, Locus 75 was visible on the ground surface as an area of slight depression in an otherwise fairly level portion of the site. Once excavation of the block began, it became apparent that this area was disturbed by later ground altering activities. However, as Locus 75 was not excavated in its entirety, it is not clear whether its origin is the result of later period tomb disturbance, looting, activities of the *sebbakhin*, or early excavation by Garstang.

5.2.4.5 Excavation Block 4 Summary

Excavation Block 4 appears to contain the remains of a domestic activity area, perhaps associated with a post structure identified earlier by Garstang. Given the number of ash features present in this area, it would appear food processing activities may have been taking place in this area. Recovered ceramics suggest that these remains date to the Naqada Ic-IIb.

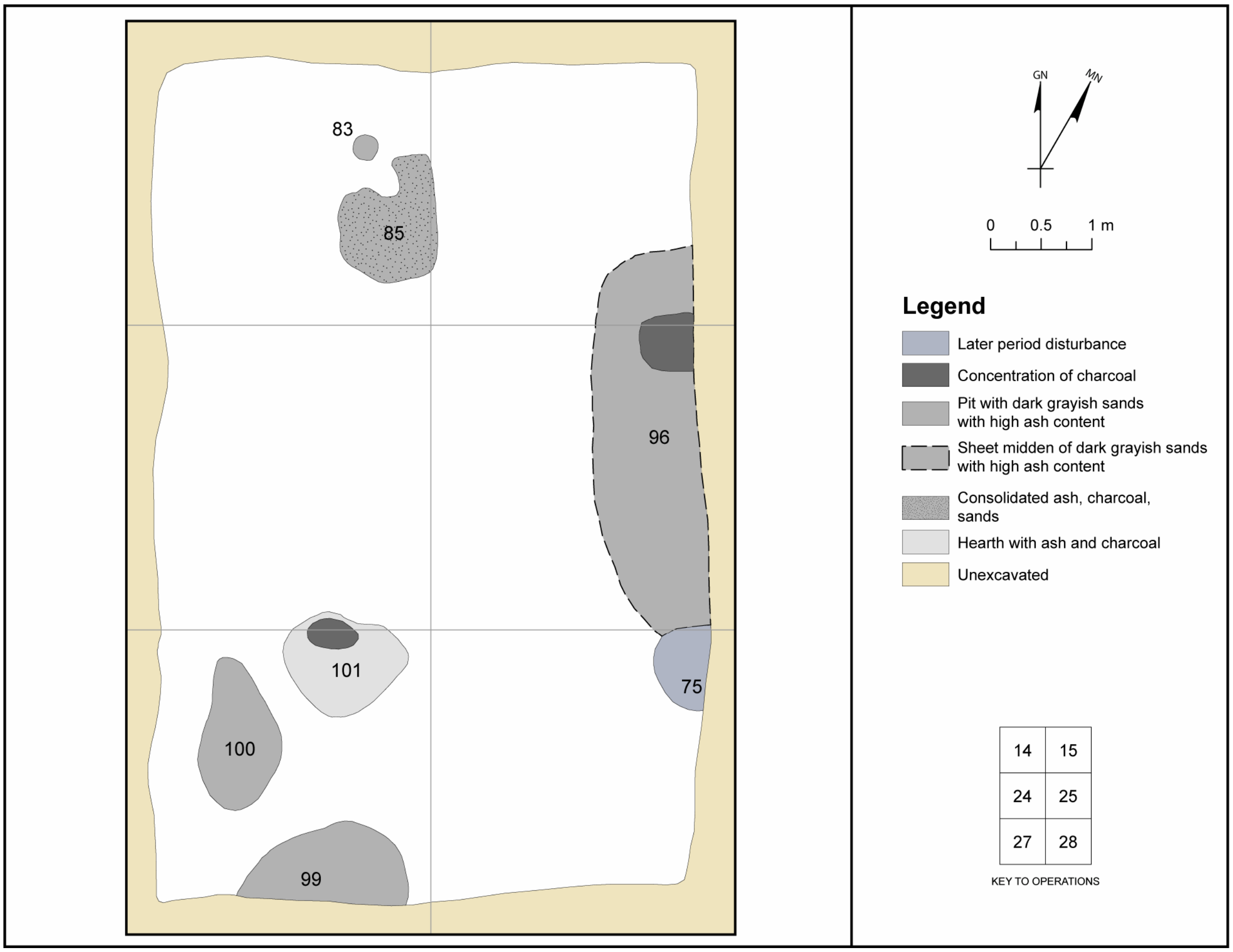

Figure 5.45: Plan view of Habitation Phase 4C showing the locations of associated features.

5.2.5 Excavation Block 5

Measuring 3 x 6 meters in horizontal extent, Excavation Block 5 is located six meters to the north of Excavation Block 2 and is comprised of two Operations, OPs 40 and 44, and occupies an area of north-to-south trending slope near the edge of the low desert escarpment (Figure 5.2). This block was excavated in order to investigate whether the deposits observed in Block 2 were a localized phenomenon or if these continued to the north and characterized the eastern edge of the site in this area. Further, the location of Block 5 was also chosen to investigate an area characterized by a substantial drop in surface concentration of Predynastic period ceramics as seen in the decrease from 126 sherds in SC-N1300 N1000 adjacent to Block 2 and 33 sherds in SC-N1315 E1000 adjacent to the northern end of Block 5.

Excavations within Block 5 resulted in the removal of an average of 55 cm of Predynastic period deposition for a combined excavated volume of approximately 9.81 m^3. Analysis of the excavations in Block 5 have resulted in the identification of three primary Predynastic habitation phases which correspond to the three habitation phases identified in Excavation Block 2, and also appear to be associated with an outdoor activity area. Features associated with these habitation phases include two possible hearths and living surfaces.

5.2.5.1 Habitation Phase 5A

Habitation Phase 5A encompasses the existing deflated desert surface deposits (Locus 2) as well as material from the uppermost Lots of Locus 98 (in Op 40) and Locus 108 (in Op 44). Both of these loci are equivalent to one another both stratigraphically and compositionally. This matrix consists of a light brownish gray to gray colored fine sand mixed with high ash content and charcoal, containing isolated lenses of possible organic material (Figure 5.46). The deposits of Habitation Phase 5A average 10 cm in thickness with a minimum thickness of 7 cm at the southern end of the block and maximum of 13 cm in thickness at the far northern edge of the excavation block. Artifacts recovered from Phase 5A include ceramic sherds, lithic debitage and tool fragments, and faunal remains. No features were identified associated with this phase. Based on the stratigraphy of the excavation block and the adjacent Excavation Block 2, Habitation Phase 5A is equivalent both stratigraphically and chronologically to Habitation Phase

2A, and Locus 98 and Locus 108 are equivalent to Locus 38/66 discussed above (Section 5.2.2.1).

Chronological Assignation of Habitation Phase 5A: Unfortunately, only 26 ceramic sherds were recovered from Habitation Phase 5A deposits. Of this total, 4 were rim sherds, none of which was sufficiently preserved to allow for profile recording and chronological comparison. However, as this phase is equivalent to Habitation Phase 2A, a date of Naqada IIa-c can be assigned with some confidence.

Figure 5.46: View of the north end of Excavation Block 5. Note the dark ash and charcoal laden nature of the deposits.

5.2.5.2 Habitation Phase 5B

Like Habitation Phase 5A just described, Phase 5B consists of Predynastic midden deposits, and were designated Locus 98 and Locus 108 during excavation. The portion of these loci that make up Habitation Phase 5B average 38 cm in thickness, with only a 9 cm range in thickness across the excavation block. In addition to the usual ceramics, lithic debitage and tool fragments, and faunal remains, a single unidentified, unfired clay figurine fragment (MAP 2658) was recovered from Locus 108 in Operation 44 as well as a small piece of wood with evidence of having been worked (MAP 2666) recovered from Locus 110 described below.

Only a single feature was identified in Habitation Phase 5B. Locus 110 is a concentration of ash, charcoal, and burned wood fragments 40 cm long and at least 37 cm wide. It is located at the northern end of the excavation block (Figure 5.47). With a maximum depth of only 9 cm, Locus 110 appears to be the remains of a small, simple, shallow hearth feature similar to those found elsewhere at el-Mahâsna. Three ceramic body sherds (2 P-/B-ware and a single unidentified, eroded sherd), a single unidentifiable bone fragment, a small number of pieces of lithic debitage, and the possible worked fragment of wood mentioned above were the only artifacts recovered from the feature.

This Habitation Phase is equivalent both in composition and stratigraphic position with Habitation Phase 2B discussed above (Section 5.2.2.2).

Chronological Assignation of Habitation Phase 5B: Only approximately 214 ceramic sherds were recovered from Habitation Phase 5B.[16] Of this estimated number, 82.2 % (n = 176) were subjected to full ware analysis. A total of 23 rim sherds were identified, but unfortunately none were subjected to profile recording and therefore cannot be dated. Nevertheless, using information obtained from the equivalent Habitation Phase 2B, this phase would appear to date to the Naqada IIa-b.

[16] This number was calculated based on 176 sherds recovered and analyzed from a total of 14 MAP numbers from this Habitation phase. Using this number, an average of 12.57 sherds/MAP number was obtained. Three additional MAP numbers were not analyzed to date. Therefore, 12.57 x 3 equals 38 (37.71) additional sherds on average were recovered giving a total estimated recovery of 214 sherds.

Figure 5.47: Plan view of Habitation Phase 5B (left) and 5C (right).

5.2.5.3 Habitation Phase 5C

The final habitation phase identified in Excavation Block 5 is comprised the very final lot (Lot 10) of Locus 108 in OP 44, and Locus 93 in both OP 40 and 44. Locus 93 in Block 5 appears to be the same stratigraphic deposits designated by the same locus number in the southern portion of Excavation Block 2 described above (5.2.2.3). This stratum consists of an average of 11 cm of yellowish brown sand with ~10% pebbles and rests upon the natural silt beds of Locus 89 discussed above (5.2.2.3). In OP 40, Locus 93 surrounds an area of compact, poorly sorted cobbles, pebbles, and coarse sands, designated Locus 104, which also rests directly upon Locus 89. This gravel area appears to be a natural deposit that has served as a substrate upon which Predynastic habitation occurred. Evidence for this can be seen in a hearth feature, Locus 103, which is cut into both Locus 104 and Locus 93 (Figure 5.47). Four ceramic body sherds, lithic debitage and seven bone fragments were recovered from the surface and upper 15 cm of Locus 104. Included among the seven faunal remains were a single specimen of domestic cattle (*Bos taurus*) and a single specimen of Nile perch (*Lates niloticus*).

Locus 103 is a shallow, simple hearth feature at least 60 x 70 cm in plan view with a maximum depth of 11 cm containing a matrix of brownish gray fine sand with a high content of ash and charcoal. Artifacts recovered from Locus 103 include lithic debitage, three ceramic body sherds, and three bone fragments, including one fragment identified as domestic sheep (*Ovis aries*).

Chronological Assignation of Habitation Phase 5C: Determining the period of occupation for Habitation Phase 5C is very difficult based on materials recovered from deposits excavated in Block 5. Only 32 sherds were recovered from this habitation phase, and only two of these were rim sherds, both of which were too small to reliably provide profile and chronological information. However, Habitation Phase 5C can be directly equated stratigraphically with nearby Habitation Phase 2C deposits which have been dated to Naqada Ic-IIab.

5.2.5.4 Excavation Block 5 Summary

The area of Excavation Block 5, like nearby Block 2, appears to have been an outdoor activity area and trash disposal area.

5.2.6 Excavation Block 6

Excavation Block 6 is comprised solely of Operation 45 and is located in the central area of the site (Figure 5.2). This Operation was located in this area in order to obtain information from an area of the site that contained very few surface ceramics as determined from the surface collections (Figure 5.3) and to investigate a concentration of lithic blades and blade tools visible on the surface and identified during the surface collections.

Work in this Excavation Block began with a full surface collection of the Operation in order to collect all the blade/blade tools and other artifactual materials. Excavation proceeded with the removal of the Locus 2 materials. Immediately upon beginning excavations, it became apparent that this area had been disturbed by the nearby Garstang 1900-01 expedition house (see

Section 5.2.7 below). This was apparent by the recovery of lithic tools and human bone fragments upon which were written pencil and ink catalog/registration numbers. Excavations were terminated at this point in time. Based on the results of the excavations in Block 7 and the site map depicted in Garstang's publication (1903: plate II), this area appears to be part of a large exterior courtyard area in front of the house.

5.2.7 Excavation Block 7

Excavation Block 7 is a single 8 x 13 meter excavation operation (OP 46) located in the central area of the site. This operation was excavated in order to investigate and define a large mudbrick structure that was believed to be the remains of Garstang's expedition house. It was important to expose and map the walls of this structure as it is one of only a few landmarks depicted on Garstang's map of el-Mahâsna (Garstang 1903: plate II) through which it might be possible to rectify his map with the modern map of the site and thus delimit those areas of the Predynastic settlement excavated by him.

Excavations within and around Garstang's house were successful in defining the outlines of the house walls. These were then used along with other landmarks to rectify as best as possible Garstang's map with the modern map of the site. Using this information, it has been possible to approximately determine the areas of the settlement where his excavations took place (Figure 3.10; Garstang 1903: Plates II and IV). Also recovered from within and around the house were numerous artifacts of both Predynastic and later date that were excavated by Garstang from the Predynastic settlement and later period tombs (Figure 5.49). Recovery and examination of these materials is providing valuable insight into the types of artifacts that Garstang did and did not choose to transport back to England, and thus a way to determine how representative these resulting museum collections are.[17]

[17] In addition to the ancient materials recovered in Excavation Blocks 6 and 7, numerous historic period artifacts related to expedition life at the turn of the 20th century were also recovered. These materials are currently undergoing analysis and will be reported in a forthcoming article (Anderson and Anderson, forthcoming).

5.2.8 Excavation Block 8

Excavated in 1995 in order to determine the extent of plow damage to the southernmost area of the site, Excavation Block 8 consists of two adjacent 3 x 3 meter Operations (OP 1 and OP 2), as well as a small (1 x 0.5 meter) expansion area along the western edge of the block designated OP 1ext (Figure 5.51). The exact placement of the block was based on the results of the 1995 surface collection which indicated a concentration of artifacts in this area, as well as the presence of a darker area of sands which was visible as a result of the agricultural plowing. As discussed above, this area of the site has been subjected to at least two different plowing episodes in the mid-1990s, as well as mechanical leveling using heavy machinery (Figure 5.50). Based on an examination of the edges of the plowed area, it is estimated that approximately 25-40 cm of surface materials were removed/disturbed by these activities. However, despite this unfortunate destruction, excavations in Block 8 have demonstrated the presence of intact Predynastic period settlement remains. These remains have been assigned to a single Habitation Period designated 8A.

Figure 5.48: Remains of Garstang's 1900-01 expedition house.

Figure 5.49: **Concentration of discarded stone tools on the floor of Garstang's expedition house.**

Figure 5.50: **Excavation Block 8 and surrounding plowed area.**

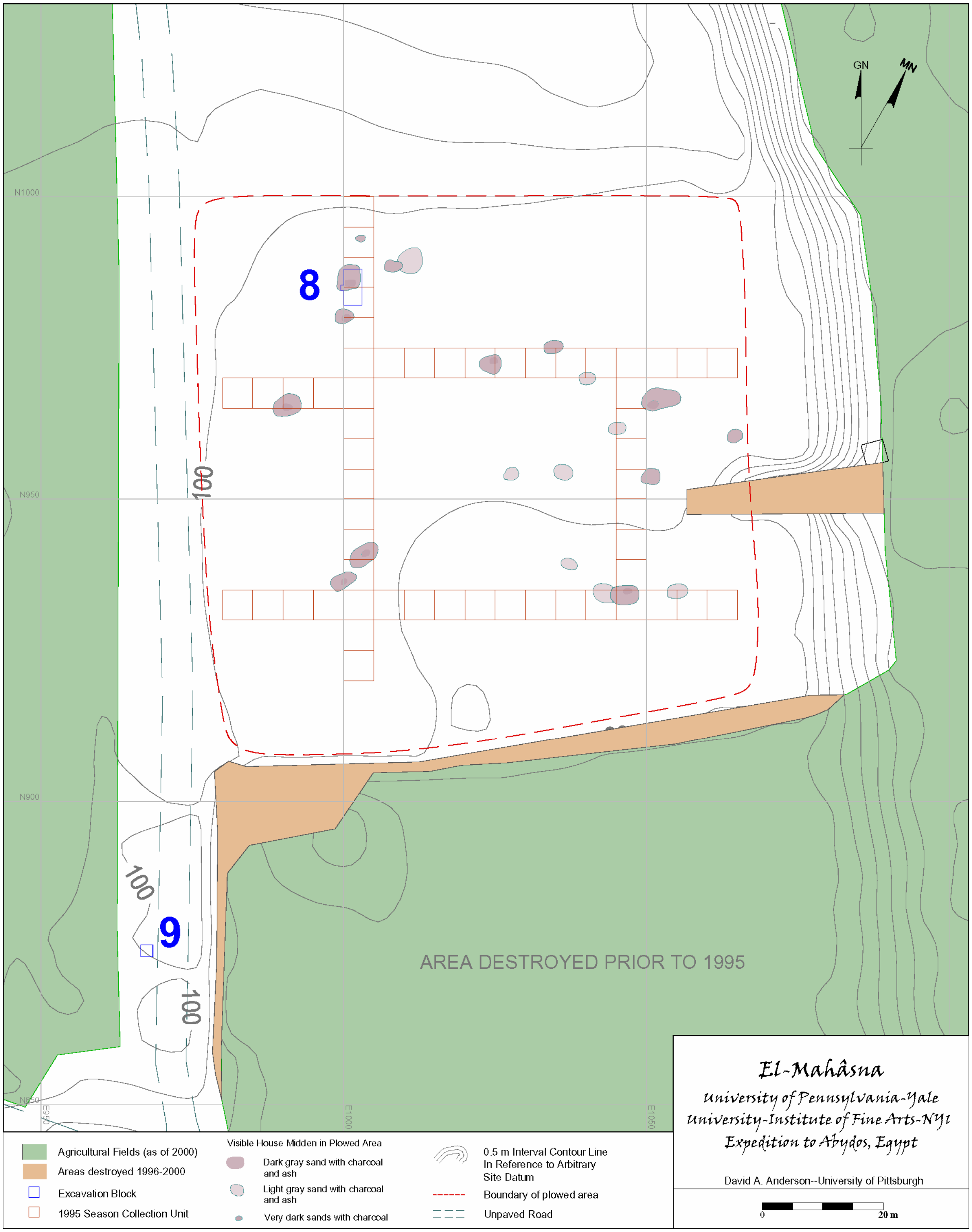

Figure 5.51: Southern area of the site showing the position of Excavation Block 8.

5.2.8.1 Habitation Phase 8A

Three strata were identified in Excavation Block 8 and have been assigned to Habitation Phase 8A. The uppermost of these strata is Locus 1 which is the plow zone material overlying the intact Predynastic period deposits.[18] This stratum varied from 10 – 20 cm in thickness depending on position in, or between, plow furrows. All Locus 1 materials were removed as a single Lot. This stratum was assigned to Habitation Phase 8A given that the plow penetrated deep enough in some areas to mix materials from the underlying deposits.

Locus 9 is a cultural stratum comprised of compact sands and gravels containing charcoal, ash and other organic particles which gives it a darker color. In some places within the excavation block, Locus 9 has a higher gravel content and is more compact in nature, suggesting that rather than representing occupation midden deposited upon a living surface, in these places, Locus 9 represents a compact living surface itself. This stratum has been impacted and destroyed in several locations by plowing, particularly in the southern one-third of Operation 2. Where preserved, Locus 9 appears to overlie Locus 8.

Stratum Locus 8 consists of loose, yellowish brown, medium to fine grained sands underlying the Predynastic period remains. Based on the nature of the deposits, this stratum has been interpreted as a layer of natural sands and represents a natural rather than cultural deposit that has been cut into in several locations by Predynastic period features. This stratum was not excavated but visual examination suggested that the stratum did not contain cultural artifacts.

Several features were identified in Block 8 and consist of posts/postmolds, prepared living surfaces, hearths/ash pits, a possible storage pit, and a single ceramic vessel emplacement.

Structural Remains – Living Floors and Posts: In several places within Block 8, the remnants of what appears to a prepared living surface were identified (Figure 5.52). Designated Locus 4, these area consisted of compact sands and fine gravels that appear to have had a very

[18] It is appropriate to provide here a note concerning Locus numbers assigned during the 1995 field season. At the time of the test excavations, Locus numbers were assigned sequentially on an Operation-by-Operation basis with each Operation's Loci beginning with Locus 1. Prior to the 2000 field season, these earlier identified loci were reassigned new Locus numbers sequentially within the entire site area. Where possible, the original locus numbers were preserved such that 1995 Op 1 Locus 3 still retains its original designation as Locus 3; as Op 1 Locus 4 is still Locus 4. However, Op 3 Locus 3 is now Locus 12. For the most part, this process was accomplished by starting with Operation 1 and progressing through Op 2 and then Op 3.

thin “skim coat” of a mud plaster applied. This mud plaster was lighter in color and may possibly have contained some lime material.

In addition to the living surfaces, other structural remains preserved within Block 8 consist of mud reinforced post molds or *calages* (Midant-Reynes and Buchez 2002: 41-48), and post molds without any apparent reinforcement. (Loci 19, and 22-28; see Figure 5.52). These consist of hollow areas which have been lined/surrounded by a mixture of mud, sand, and small pebbles/gravels, or hollows within a compact surface that are filled with a powdery organic material that appears to be decayed wood. The insides of some of the mud lined hollows have the impressions of wood, while others are smooth. In the case of several of the post molds, there is present a built-up ring (Loci 23 and 24) or a partial ring (Loci 26 and 28) of mud and small pebbles/stones that appears to be functioning as chocking or wedging, adding additional support to the former posts. All of the *calages* in Block 8 are Type 2b as described by Midant-Reynes and Buchez (2002: 45). The posts identified in Block 8 range in size from a minimum diameter of 5 cm to a maximum diameter of 22 cm, with a mean diameter of 10.4 cm (Table 5.6).[19] On average, posts from Block 8 are 6.52 cm larger in diameter than those from the structure uncovered in Block 1. This difference in post diameters is very significant ($t = 4.738$, $p < 0.0000$) and perhaps indicates, taken together with the use of mud reinforcement in 63% of the posts, that the structure in Block 8 was designed to be more permanent in nature than the Block 1 structure.

Pyrotechnic Features – Hearths and Ash Pits: Two pyrotechnic features were identified within Block 8; Locus 3 and Locus 5 (Figure 5.52). Locus 3 was a oval shaped, shallow depression with an undulating bottom. Measuring 43 x 64 cm in plan view, Locus 3 was only 9 cm deep and was filled with a very loose ashy deposit. This feature has been interpreted as an ash disposal feature as there is not evidence of thermally altered sands/soils surrounding or under the ashy deposits.

[19] All eight posts were included in this analysis. In the case of the *calages*, the diameter of the central cavity was used as the diameter of the post.

Table 5.6: Summary of post molds present in Excavation Block 8.

Locus	*Calage* Type [a]	Post Dia. (cm)	Summary Statistics for Posts		Mud Ring Dia. (cm)	Summary Statitics fo Mud Rings	
			Statistic	Value (cm)		Statistic	Value (cm)
19	2b	10.5	Mean	10.44	18	Mean	16.3
22	--	10	Minimum	5	--	Minimum	10.5
23	2b	8	Maximum	22	16	Maximum	20.0
24	2b	10	Std. Dev.	5.4	17	Std. Dev.	3.6
25	--	22			--		
26	2b	13			20		
27	--	5			--		
28	2b	5			10.5		

[a] These types are based upon those defined in Midant-Reynes and Buchez 2002:41-48.

Artifacts recovered from Locus 3 include lithic debitage, faunal remains, and ceramics. All of the recovered faunal remains (n = 30) showed evidence of burning/charring and included specimens of sheep/goat sized mammals as well as at least four specimens of what appear to be bird remains. Ceramics recovered included 17 sherd of R-ware, 12 sherds of B-ware, and 2 sherds of P-ware.

Similar to Locus 3 in both size and form is Locus 5, a hearth feature located in the northeast corner of Block 8. Locus 5 is ovoid in shape and measures 46 x 68 cm in plan with a maximum depth of 9 cm. The matrix of Locus 5 consisted charcoal rich silts and sands also containing larger fragments of charcoal and charred organic material. Surrounding the matrix of the hearth is a band of reddened, thermally altered sands along both the sides and bottoms of the feature. Additionally, a thermally altered stone was present in the bottom center of the feature.

Artifacts recovered from Locus 3 include lithic debitage, faunal remains, and ceramics. Ceramics recovered include 4 sherds of R-ware, and a single sherd of B-ware.

Pits: A single pit feature was identified in Excavation Block 8. Designated Locus 6, this pit was a large, flat bottomed pit with out-slopping sides containing a matrix of gray, very fine sand with fine particles of charcoal (Figure 5.52). Measuring 131 cm x 118 cm in plan, the pit extends to a depth of 23 cm below the surface of the adjacent living surfaces (Locus 2 and 4). It has been cut into the underlying natural sand stratum, Locus 8. Further, it is possible that this pit was also cut through the adjacent mud plaster living surface, Locus 4, although this could not be definitively determined during excavation. If in fact it does cut through the Locus 4 surface, then this would suggest that the pit is associated with a later habitation phase, or later phase of use of the structure represented by the living floor materials and postmolds discussed above; in which case, the upper portion of the feature has been truncated by the agricultural plowing.

There is evidence that this pit either contained a basket, or was lined with basketry. In the center of the bottom of the feature an area of very decayed organics approximately 20 cm in diameter was encountered. These materials, while extremely friable, appeared to have visible a spiral pattern, reminiscent of the bottom central coil of a basket. Other artifacts recovered from the pit include 21 pieces of lithic debitage, 66 fragments of bone and shell, and 24 ceramic sherds. The recovered ceramics are primarily R-ware (n = 15) but also include seven sherds of B-ware and 2 sherds of P-ware.

This pit has been interpreted as a storage pit based on the presence of the basketry and other morphological traits that are similar to pits from other Predynastic settlement sites in Upper Egypt that have been interpreted as functioning for storage (Ginter and Kozłowski 1994; Midant Reynes and Buchez 2002) Given the size of the pit and the presence of the basketry in the bottom this pit has been interpreted as being for storage purposes, perhaps for agricultural materials.

Ceramic Vessel Emplacement: The remains of a ceramic vessel emplacement were recovered along the central west edge of Block 8 (Figure 5.52). As a result of the discovery of this vessel, a small extension to the excavation block designated OP 1ext was excavated. The ceramic vessel emplacement, designated Locus 7, consisted of a single upside-down R-ware vessel that was severely truncated by the actions of the plow (Figure 5.53). Only preserved for approximately 9.5-10 cm below the rim, this sand tempered vessel has a roughened exterior surface without added slip or paint (ceramic code R212030) and a vessel wall thickness of 8 mm and vessel opening of 26 cm. The exterior of the vessel shows evidence of fire blackening resulting from use. The vessel was repaired at least once in antiquity based on the presence of drill holes on either side of a vertical crack. In addition to damage from plow impact, the vessel was also extensively affected by salt damage as a result of this area of the site having been subjected to agricultural irrigation for at least one growing season.

It is unclear what was the original purpose/function of this vessel emplacement. With the exception of vessel MAP1792 from Locus 73 discussed above and a large *majur* discovered by Garstang (1903:6 and Plate II), all the other vessel emplacements encountered at el-Mahâsna have been in an upright position. Other artifacts recovered from the matrix within (i.e. under) the vessel include two bone fragments most likely of fish, several pieces of lithic debitage, and a single probable seed.

Chronological Assignation of Habitation Phase 8A: Diagnostic ceramics recovered from Excavation Block 8 suggest that this phase dates to the Naqada Ic-IIb.

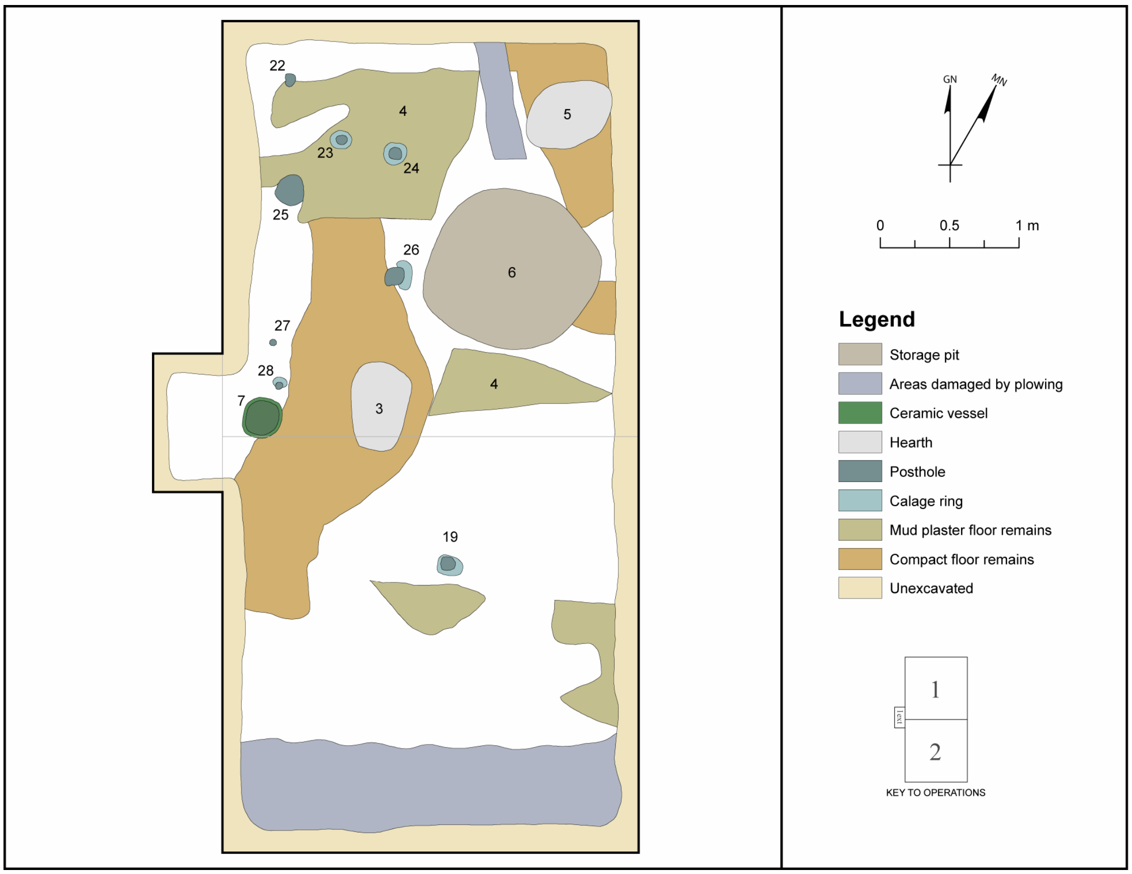

Figure 5.52: Plan View of Excavation Block 8.

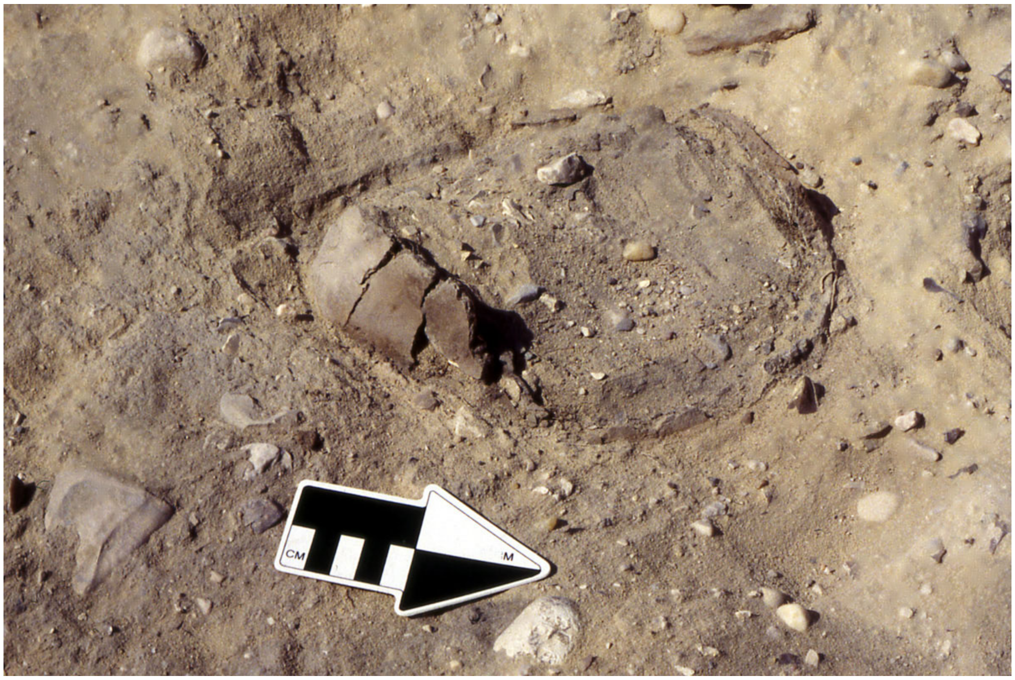

Figure 5.53: View of Locus 7 before excavation.

5.2.9 Excavation Block 9

Excavation Block 9 consisted of a single 2 x 2 m excavation operation (OP 3) near the extreme southern end of the Predynastic settlement. Located within the area being used for agricultural fields in 1995, Op 3 was excavated in order to verify the presence of Predynastic settlement remains under the area of new fields and to determine any impact these fields may have caused to the archaeological remains if present.[20] Excavations revealed the presence of 0.25 - 0.32 m of recently added silts/sands overlying intact Predynastic period habitation deposits. Excavations in Block 9 extended to a total depth of 0.90 m below the surface of the agricultural fields and revealed the presence of at least 0.52 m of Predynastic period remains.

As a result of irrigation from the agricultural fields surrounding Block 9, the deposits were constantly damp, allowing for the vertical walls of the operation to survive without slumping (Figure 5.54). Therefore, it was possible to examine and record these preserved profiles, and from these to assign the deposits to three habitation phases, designated 9A-9C. While three phases have been defined, only two of these phases, 9B and 9C, are the result of

[20] The eastern boundary of the fields was moved west of Operation 3 following the 1995 season.

Predynastic habitation, while 9A represents recently added materials for the construction of new agricultural fields.

5.2.9.1 Habitation Phase 9A

As stated above, Habitation Phase 9A is comprised entirely of silts and sands recently added to the land surface (Locus 10) as well as a small area of darker sands containing several pieces of debitage with evidence of "desert polish" (Locus 11) present at the very base of the Locus 10 and lying upon Locus 12 of Habitation Phase 9B.

Very little cultural material was recovered from Habitation Phase 9A and consisted of several "desert polished" pieces of lithic debitage and six ceramic sherds. The recovered ceramics were comprised of four, non-chronologically diagnostic fragments of Predynastic period utilitarian ware and two fragments of probable Roman period pottery, further supporting the recent redeposition of these materials.

5.2.9.2 Habitation Phase 9B

Habitation Phase 9B is represented archaeologically primarily by a stratum of compact fine sand and small gravels (Locus 13) and two lenses of darker, more charcoal/ash rich sands (Loci 12 and 14) located in the upper portion of the stratum. Additionally, a single pit feature, Locus 15, was also identified in the southeast corner of Operation 3.

Locus 13 was identified directly below Locus 10 and represents Predynastic period occupation. This stratum varied in thickness from 20 cm along the western portion of the operation to 32 cm in the southeastern corner of the operation. Lying on top of this stratum were two thin lenses of darker materials designated Locus 12 and Locus 14. Locus 12 consisted of dark brown silts with fine sands and charcoal, while Locus 14 was comprised of yellowish brown sands with silt and fine charcoal and ash. Both of these loci would appear to represent lenses of habitation debris resting upon the surface of Locus 13. Cultural materials recovered from these three loci consist of lithic debitage, three unidentifiable fragments of bone, and eight ceramic body sherds; 2 B-ware, 1 P-ware, 4 R-ware, and a single fragment of either B- or P-ware.

Locus 15 was identified in the southeastern corner of the operation at a depth of 66 cm below the modern ground surface and is interpreted as a pit type feature. The portion present within the operation was approximately 65 x 65 cm in horizontal dimensions with a maximum depth of 34 cm, but the actual dimension of the entire feature are unknown. The pit matrix was comprised of two distinguishable internal strata. The upper most of these consisted of very light yellowish drown fine sands and appears to represent windblown materials deposited within the pit after being abandoned. The lower of the internal strata was a dark yellowish brown sandy silt with charcoal particles. Artifacts recovered from Locus 15 are two fragments of animal bone, one of which was a fragment of a radius from a sheep/goat sized artiodactyls, several pieces of lithic debitage, and three sherds of Predynastic period ceramics. These ceramics consisted of a single body sherd of B-ware and two small rim sherds of R-ware.

One final feature associated with Habitation Phase 9B was a possible a single wooden post designated Locus 29. This post consisted of a concentration of highly decayed wood fragments approximately 12 cm in diameter and located in roughly the center of the Operation.

Unfortunately no chronologically diagnostic artifacts were recovered from Habitation Phase 9B.

5.2.9.3 Habitation Phase 9C

Habitation Phase 9C was not excavated and was only identified at the base of excavations in the northeast corner of Operation 9 at the end of the 1995 field season. Assigned Locus 16, it was identified by a change in soil color to one of a much lighter sandy silt with less charcoal than the overlying Locus 13. The only artifacts recovered were several pieces of lithic debitage collected when the top of Locus 16 was cleaned for final unit photographs.

Figure 5.54: West Wall of Operation 3.

6.0 RESULTS OF FIELD INVESTIGATIONS, PART II: ARTIFACTS AND INTRA-SITE DISTRIBUTION ANALYSIS

In Section 3.3 a number of patterns concerning the nature of, and spatial distribution of various artifact and feature classes were put forward which I believe allow us to look at the issue of intra-settlement competition for power at el-Mahâsna and thus address the larger issue of the nature of power acquisition during the Predynastic period in Upper Egypt.

This chapter presents the results of analyses for those categories of artifacts believed to provide information about elite activities at el-Mahâsna. Each section first discusses the analyses that were performed for each class/category of object, followed by a discussion of the general nature of that particular artifact assemblage at el-Mahâsna as a whole. In the case of some of the larger artifact categories (specifically ceramics and faunal remains) the discussion then focuses on the sub-assemblages for that category in each of the major excavation blocks. Given rather small sample sizes in some of these categories, discussions of the artifacts is presented within each of the blocks without attention to Habitation Phase. Finally, the intra-site spatial distribution of the artifact category (and subcategory in the case of the larger artifact classes) is presented. Following the presentation of the artifact analysis and spatial distributions, the spatial distribution of select feature classes having relevance to the research questions are presented. While discussion of the implications of the spatial patterning as they relate to addressing the greater research questions put forth in Section 3.3 is reserved for Chapter 7.0 below, some observations will be presented herein.[21]

[21] It should be noted that the total assemblage of artifacts recovered from the three seasons of field work at el-Mahâsna is extremely large and the information presented here is a subset of that overall larger body of data. Various time and financial constraints limited the amount of analysis conducted on the assemblage. Further the size of some of the individual artifact categories greatly exceeded expected artifact yields based on the 1995 test excavations and surface collections. Therefore, some categories of objects originally intended for analysis were not analyzed at this time, while for other categories it was necessary to analyze a sample of those recovered. Finally, while all the structural remains (i.e. features and strata) that have been excavated to date were presented above in Chapter 5.0 , this chapter only presents data on those categories of artifacts, and specific types of analysis conducted

6.1 CERAMICS

6.1.1 General Nature of the el-Mahâsna Ceramic Assemblage

The ceramic assemblage from el-Mahâsna represents potentially the largest category of artifacts recovered, amounting to nearly 100,000 sherds and partial/complete ceramic vessels. Of this total, a sample of just over 70% was examined as part of the ceramic analysis as described above in Section 4.2.1. As discussed in that section, only sherds greater than 2 cm in diameter were fully analyzed by this process. In the end, 43,454 sherds or 44% of the entire assemblage was subjected to detailed analysis for the purposes of identifying characteristics relative to ceramic ware type, and special purpose ceramics, as well as indentifying any potentially non-local or imported wares. Detailed results of the analysis of the el-Mahâsna ceramics will be reported in a forthcoming publication. This section focuses only on those aspects of the assemblage and subsequent analyses which allow us to address issues of ceramic usage at the site relative to the research questions and hypothetical patterns of ceramic distributions within the settlement. Specifically these include (1) defining the nature of local Abydos region ceramics relative to fabric and temper so that ceramics from other areas of Upper and Lower Egypt may be identified; (2) determining the nature of the ceramic assemblages in each of the excavation blocks with respect to relative ware frequencies; (3) identifying specialty ceramics that may have functioned in ritual contexts; and finally, (4) determining the nature and distribution of vessel forms at el-Mahâsna.

The ceramic assemblage from el-Mahâsna is, as expected, dominated by rough utilitarian ceramics, equivalent to Petrie's Rough ware or R-ware class ceramics, amounting to 66.26 ± 0.61% of all Predynastic period ceramics recovered.[22] Also, as expected, the next most prevalent

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on those artifact types, that are required to address the research questions outlined in Section 3.3. Additional data on the artifact assemblages recovered from el-Mahâsna has been/will be presented in other/future works, including Anderson 2002b; Anderson and Anderson, forthcoming; Rossel 2006.

[22] This includes all those ceramics of a more "utilitarian" or "rough" nature regardless of the temper employed in the manufacturing process, not just those of straw tempering as originally defined by Petrie and Quibell (1896: 11; see also Friedman 1994:99-100).

Additionally, it should be noted that whenever error ranges are presented, they are done so for the 95% Confidence level.

class of ceramics is the combined Black-topped red ware and Polished red ware assemblage (B- and P-wares) comprising 33.5 ± 0.61% of the assemblage. Those ceramics with painted decoration, Petrie's C- and D-ware ceramics account for only 0.14 ± 0.05%, while the remaining 0.10 ± 0.04% of the ceramic assemblage consists of a combination of Petrie's L-, and N-, and W-wares. Within the approximately 33% of the assemblage that is comprised of B- and P-wares, 45.18 ± 1.11% are classified as Black-topped red ware while only 33.77 ± 1.05% are Polished red ware. The remaining 21.05 ± 0.91% consists of sherds (designated "K" during analysis) that could not be definitively classified as originating from either B- or P-ware vessels based on the portion preserved. Given this rather high percentage of B/P fragments, the categories of B- and P-ware are typically combined in the following discussions. Therefore, when proportions of ceramic wares are discussed throughout this chapter, they are discussed relative to the following larger categories: 1) Rough ware or R-ware; 2) Polished wares or B- and P-wares; 3) Decorated wares or C- and D-wares; and 4) Others.[23]

The remainder of this section discusses specifics of the ceramic assemblage including the topics of temper use, local versus non-local ceramics, vessel forms, and the nature of the ceramic assemblage in each of the excavation blocks.

6.1.2 Defining the "Native" Predynastic Ceramics of the Abydos Region

In order to define those Predynastic ceramics that are local to el-Mahâsna and the Abydos region, particular attention was paid to the types of tempers utilized in their production. Friedman (1994) has demonstrated that regional variation exists within the Upper Egyptian Predynastic ceramic sequence, and that this variation is most notable in the selection of tempering agents used by potters in any particular area. Additionally, she noted that these choices manifest themselves most often in the utilitarian wares (Petrie's R-ware) rather than the fine wares (Petrie's B-, P-, C- and D-wares), although some variation in temper choice does exist in these wares as well (Finkenstaedt 1985:143). In her study, Friedman defined three primary regional

[23] The term "Decorated wares" will generically be used to refer to a combination of Petrie's White Cross-lined or C-ware and Petrie's Decorated or D-ware classes (Petrie 1901:14-15; 1921). Where referring specifically to one or the other of the types, the single letter abbreviations (i.e. C-ware or D-ware) will be used. Additionally, when the meaning is specifically Petrie's Decorated class, then it will be referred as such with "Petrie's" as a prefix.

zones of local ceramic "tradition" based around Hierakonpolis, Naqada, and Hemamieh. While Abydos is bordered on the north and south by regions in her study, Friedman did not have an assemblage of settlement ceramics from the Abydos region available for analysis.

For the purposes of "defining" the local Abydos "ware" only sherds of the utilitarian ceramics (i.e. R-ware) manufactured using Nile silt clays were used. In total, 13 varieties of tempering agent were identified within the R-ware assemblage and are listed in decreasing relative frequency in Table 6.1. From this table it is readily apparent that the two most prevalent tempers are what was referred to as "Normal" and chaff/straw temper, both making up over 40% of the overall assemblage. The designation "normal" was used during analysis to describe what quickly appeared to be a prime tempering agent at el-Mahâsna, namely a combination of roughly equal proportions of chaff/straw, sand, and crushed limestone. This is not a combination of tempering agents that Friedman (1994:167) identified in her study of ceramics from the other three regions and therefore most likely represents the typical or regional signature for the Abydos region during at least the early-mid Predynastic period, and possibly later. Further, limestone tempered ceramics recovered from el-Mahâsna which comprise roughly 2% of the assemblage are not equivalent to Friedman's fabric/temper class 5, which appears to be much more like the marl clay fabrics characteristic of the D-, W-, and L-wares of Petrie's classification scheme (Friedman 1994:157-158). Ceramics from el-Mahâsna containing limestone tempering very much resemble those of the other Nile silt based R-ware ceramics tempered with various mineral or organic substances.

6.1.3 Defining Wares From Other Regions

From the results of the analysis just described, taken in conjunction with the results of Friedman's study, it is possible to identify several ceramic wares that originated in other regions of both Upper and Lower Egypt and potentially Nubia; thus providing a means for examining inter-regional interaction by members of the el-Mahâsna community. Friedman's Fabric/Temper classes 7 and 27, or those containing grog as a tempering agent, are noted by Friedman as only occurring at the Naqada Khattara sites (1994:152-154, 878). Fabric/temper class 21 occurs only in the Hemamieh assemblages, but according to Friedman is very similar in all other ways except

Table 6.1: Frequency of tempering agents in R-ware ceramics

Temper	Total Sherds	%	Fabric/Temper class of Friedman [a]
Normal	7477	48.95	---
Chaff/Straw	6353	41.59	1
Coarse Organic	418	2.74	21
Grog	372	2.44	7
Limestone	294	1.92	---
Sand	151	0.99	9
Poorly prepared clay	103	0.67	---
None	63	0.41	2 and 22
Grog and Organic	33	0.22	27
Marl Clay and Limestone	5	0.03	5 (?)
Chaff/Straw and Sand	3	0.02	---
Dung	2	0.01	11
Shale	1	0.01	3
Total	15275	100.00	

[a] From Friedman 1994. No number present indicates that there did not appear to be an equivalent in Friedman's classification.

lacking grog and therefore may be also related to Fabric/temper class 27 and thus may be associated with the Naqada Khattara sites as well (1994:151). Fabric/temper class 9, or sand tempered ceramics were only identified in the Hierakonpolis assemblage by Friedman (1994:155-156). However, given the prevalent use of sand as part of the el-Mahâsna "normal" temper, it is possible that rather than indicating an origin at Hierakonpolis, this temper may have local roots as well. Further support of this local origin for sand tempering comes from it being the second most prevalent temper type (11.4 ± 0.71%) of the polished wares. Fabric/temper class 11 appears to be related to ceramics whose origin lies with Nubia and this class was only rarely identified in the assemblages of Hierakonpolis and the Naqada Kattara sites (Friedman 1994:148). Finally, Friedman has identified Fabric/temper class 3 in the assemblages of Hierakonpolis and the Naqada Khattara sites and it further occurs at Armant (type 5) as well as Adaïma (type 3) (Friedman 1994:154-155).

In addition to relying purely on tempering agent as a method for identifying non-local ceramics found at el-Mahâsna, other recorded attributes were examined that have been shown to have relevance in identifying ceramics from particular regions. Most useful of these attributes is decoration; typically in the form of punctuates, incisions, and impressions. Surface decorations are very rare in the el-Mahâsna assemblage and consist of pot marks, impressions/incisions, finger channeling, thumb impressions, and red and white paint. These are listed in Table 6.2

along with their associated frequency of occurrence. In all cases, those sherds indicated as having red or white paint decorations are Petrie's D-ware and C-ware respectively. As can be seen, occurrences of various decoration types are in many cases limited to only a few specimens. Further in only a few instances has it been possible to identify any particular sherd as originating outside of the Abydos area based solely on decoration with the exception of two sherds of Petrie's N-ware which has Nubian origins and is characterized by surface incisions that have been in-filled with a white pigment/clay, as well as a single small jar sherd with regular punctuates that appears very similar to vessel fragments recovered at Hierakonpolis Locality 29A and believed by Friedman to have originated in the Predynastic cultures of Lower Egypt (Friedman 1994: 713-716). The distributions of all those ceramics that have been determined to be of non-local origin are discussed below in Section 6.1.5.1.

Table 6.2: Decorations on ceramics from el-Mahâsna.

Decoration Type	Total Sherds
Finger Channeling	1
Impressed/Incised	45
Pot Mark	8
Punctate	7
Red Paint	9
Thumb Impressed	3
White Paint	23

6.1.4 Discussion of Ceramics from Each Excavation Block

This section briefly discusses the nature of the ceramic assemblage in each excavation block relative to ceramic wares, temper types present within the Rough ware class, and the types and proportions of vessel forms recovered. Observations of note are discussed as are complete ceramic vessels where these items were recovered. These topics are summarized in **Error! Reference source not found.** and Figure 6.1 as well as Table 6.3 and Table 6.4. Because of the very small number of ceramics recovered from Blocks 5 and 9 which could be identified to the level of both temper and ware class (*n* = 178 and *n* = 21 respectively), relative to the other blocks these areas are not discussed further below.

Table 6.3: Relative porportions of ceramic ware classes within each excavation block.

Excavation Block	Proportion of Ceramic Ware Class			
	Polished Wares (B and P)	Decorated Wares (C and D)	Rough Wares (R)	Other
1	26.53	0.10	73.37	--
2	42.09	0.11	57.73	0.08
3	35.48	0.21	64.31	--
4	42.65	0.11	57.23	--
5	61.85	--	38.15	--
8	30.96	--	69.04	--
9	33.33	--	66.67	--

Table 6.4: Percentage of temper types among the R-ware ceramics in each excavation block.

Excavation Block	Chaff / Straw	Chaff / Straw and Sand	Coarse Organic	Dung	Grog	Grog and Organic	Limestone	Marl Clay and Limestone	No Temper	Normal	Poorly prepared clay	Sand
1	47.94	0.07	1.29	--	0.47	--	0.74	0.07	0.07	49.36	--	--
2	29.25	--	0.59	--	3.47	0.20	3.08	--	--	63.42	--	--
3	39.06	--	2.77	0.02	3.31	0.37	2.96	0.09	--	51.16	--	0.26
4	38.01	--	1.00	--	2.81	--	2.51	--	0.10	55.07	--	0.50
5	7.58	--	1.52	--	7.58	--	6.06	--	--	77.27	--	--
8	29.94	--	--	--	0.57	--	1.43	--	7.45	34.96	10.17	15.47
9	50.00	--	--	--	--	--	--	--	10.00	30.00	--	10.00

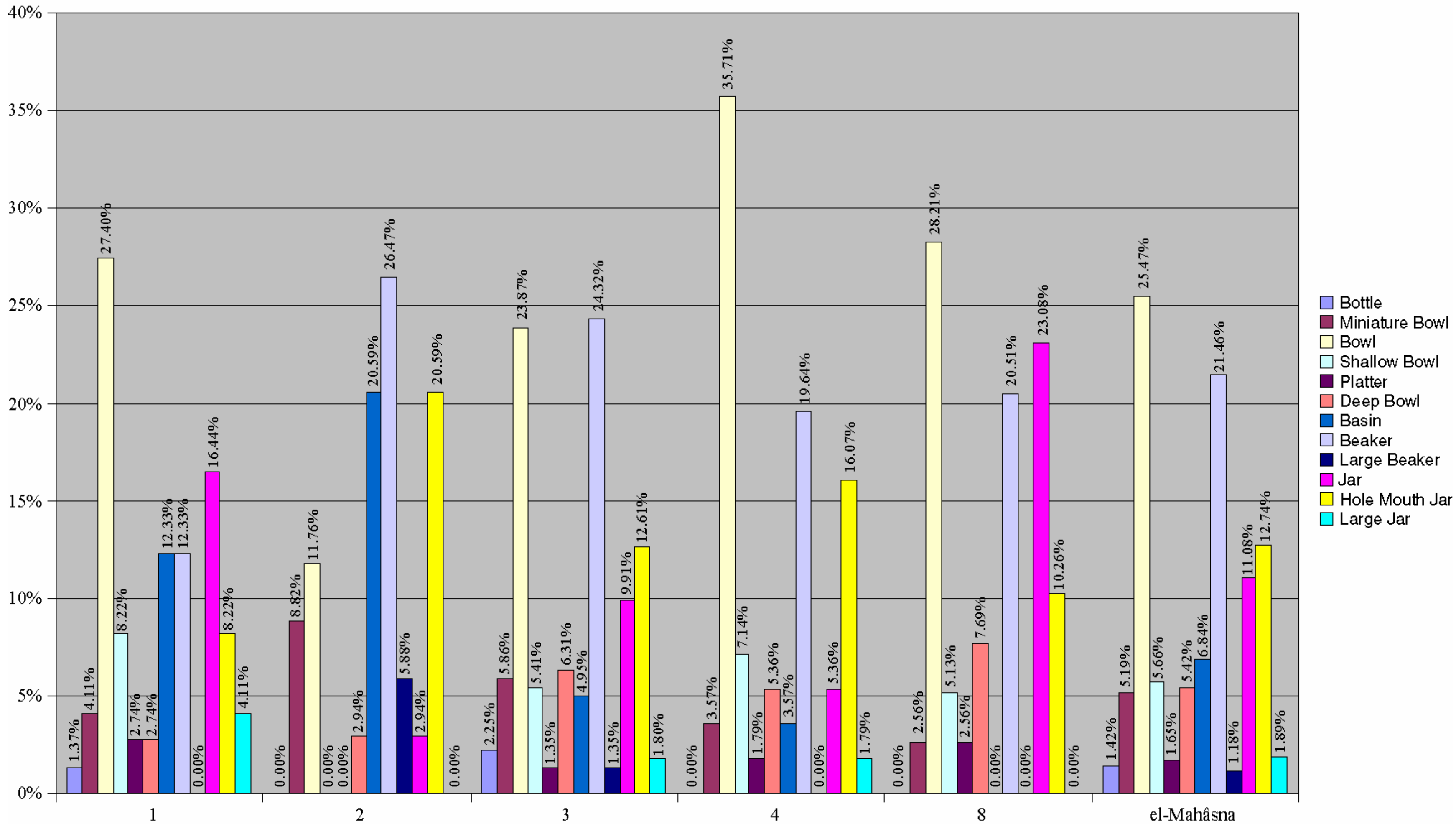

Figure 6.1: Relative proportion of vessel forms within each Excavation Block.

6.1.4.1 Block 1

Only 27% of the examined ceramic sherds from excavated contexts in Block 1 were sufficiently preserved (>2cm in diameter with non-eroded surfaces) to allow for classification with respect to both temper and ware class. As can be seen in Table 6.3, Block 1 has a higher proportion of Rough ware ceramics than do the other blocks. Of these, the predominate temper type other than Normal is Chaff/Straw. When compared to the other excavation blocks, the proportion of Chaff/Straw tempered R-ware ceramics in the Block 1 assemblage is significantly higher than we see in any of the other blocks where a sufficiently large sample of ceramics was recovered (Figure 6.2). Also of note is that Block 1 has a significantly lower proportion of non-local wares than any of the other blocks with the exception of Block 8 (see Section 6.1.5.1)

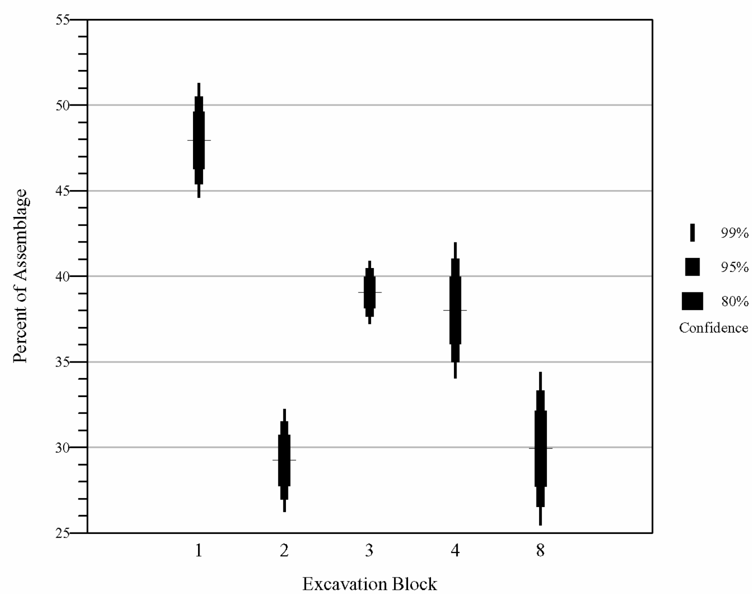

Figure 6.2: Comparison of the proportion of chaff/straw tempered Rough ware ceramics in each of the excavation blocks.

Vessel forms recovered from Block 1 include every category of shape/form with the exception of large beakers. Of special note in Block 1 is the unusually high proportion of basins and jars relative to the other excavation blocks (Figure 6.3 and Figure 6.4). As can be seen in the graphs, Block 1 has a significantly higher proportion of jars ($p < 0.001$) than Blocks 2 – 4, and a higher, though slightly less significant, proportion of basins than Blocks 3, 4, and 8. This may suggest that Block 1 was more highly involved in subsistence production and storage activities than some of the other blocks. However, when one examines the proportion of all jar forms (Figure 6.5) Block 1 shows a very similar proportion of these vessel forms to that seen in the other blocks, suggesting at least that Block 1 is not any more involved in storage pursuits than the other areas.

Representative profiles for each of the vessel forms recovered at el-Mahâsna are presented in Appendix B below.

A single, nearly complete, ceramic vessel was recovered from Excavation Block 1, and is a very nice example of a Black-topped red ware jar (Figure 6.6). It was recovered from Habitation Phase 1A, just under the modern ground surface where it was found broken in numerous large fragments. It is manufactured of untempered Nile silt clays and has been highly burnished across the entirety of its external surface.

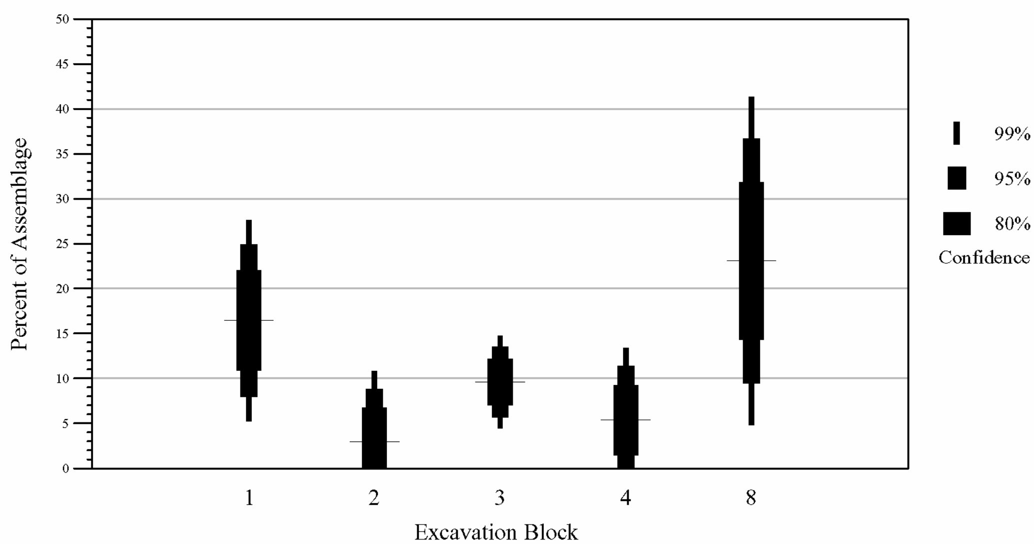

Figure 6.3: Comparison of the proportion of jar forms in each excavation block.

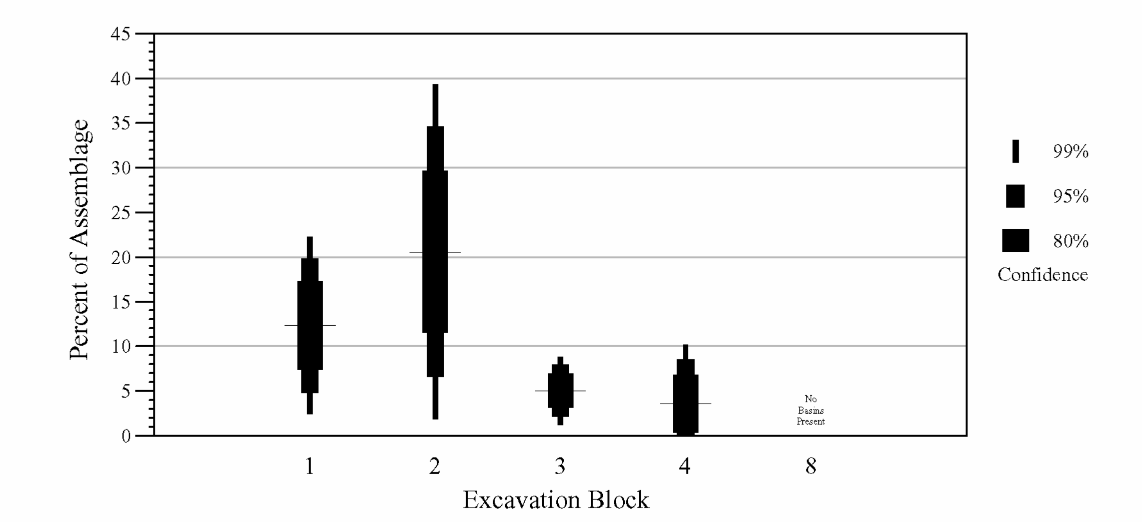

Figure 6.4: Comparison of the proportion of basins in each excavation block.

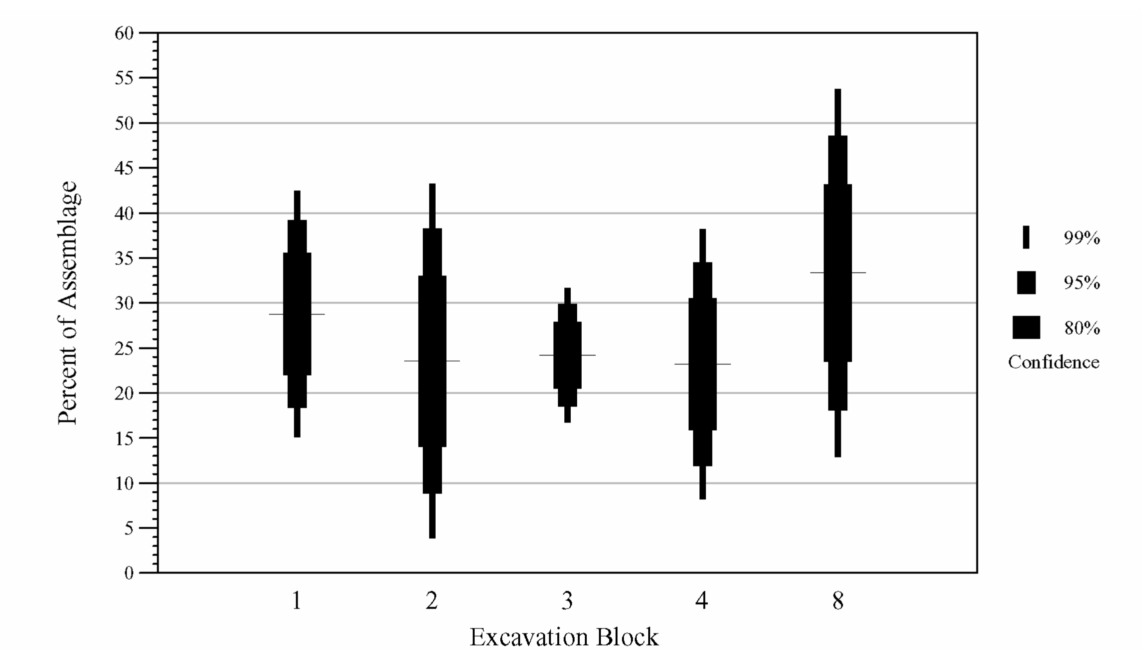

Figure 6.5: Comparison of the proportion of all jar forms within each of the excavation blocks.

Figure 6.6: Black-topped red ware vessel (Locus 69; MAP1599) recovered from Excavation Block 1, Phase 1A.

6.1.4.2 Block 2

Excavation Block 2 had the highest density of ceramic sherds recovered from the site with just slightly more than 702 sherd/m^3 of excavation. This is more than 2.8 times greater than the next densest, Excavation Block 1, which has only 249 sherds/m^3. Further, Block 2 has one of the highest proportions of very small sherds (< 2cm) suggesting that this area was subjected to a higher degree of traffic/trampling in Predynastic times than the other areas, supporting the suggestion presented above that Block 2 is likely an outdoor activity area, potentially associated with Block 3, that was also used for trash disposal.

While still having a higher proportion of Rough ware ceramics than other classes, the difference between the proportion of Rough ware and the polished wares is not nearly as pronounced as in Block 1, with only slightly less than 58% of the Block 2 assemblage comprised of Rough ware and approximately 42% of polished wares (Table 6.3). The temper types employed in the manufacture of the Rough ware ceramics recovered in Block 2 show a much heavier use of Normal temper than any of the other blocks, with over 63.4% of the ceramics having this temper (Figure 6.7). In comparison to Blocks 1, 3, and 4, the ceramic assemblage from Block 2 has a significantly much lower proportion of chaff/straw tempered ceramics (Figure 6.2).

Vessel forms recovered from Block 2 are notable for the absence of bottles, shallow bowls, platters, and large jars (Figure 6.1). Also of note is a much higher proportion of miniature bowls (8.82%), basins (20.59%), beakers, both large and small (32.35% combined), and hole-mouth jars (20.59%), in comparison to the other excavation blocks. Block 2 also has a significantly lower proportion ($0.05 > p > 0.01$) of all types of bowls than the other blocks (Figure 6.8). Unfortunately, because of the relatively small number of rim sherds that were studied, error ranges associated with proportions of the various vessel forms in Block 2 are typically much larger than the other blocks thus making comparisons and observed differences, while still very suggestive, less statistically confident. As with the vessel forms from Block 1, those recovered from Block 2 suggest an involvement with food preparation as seen in the high proportions of basins and deep bowl forms which may indicate evidence of dough preparation for bread making. Additionally, the larger proportion of miniature bowls, most likely drinking cups, suggest an increased consumption of liquids (beer?) than in the other blocks with the exception of Block 3 which also has a noticeably higher proportion of these items than do Blocks 1, 4 and 8 (Figure 6.9).

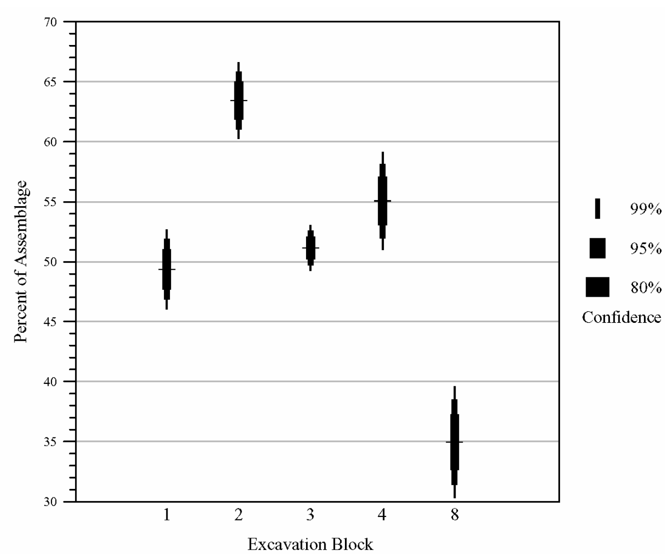

Figure 6.7: Comparison of the proportion of Normal tempered Rough ware ceramics in each of the excavation blocks.

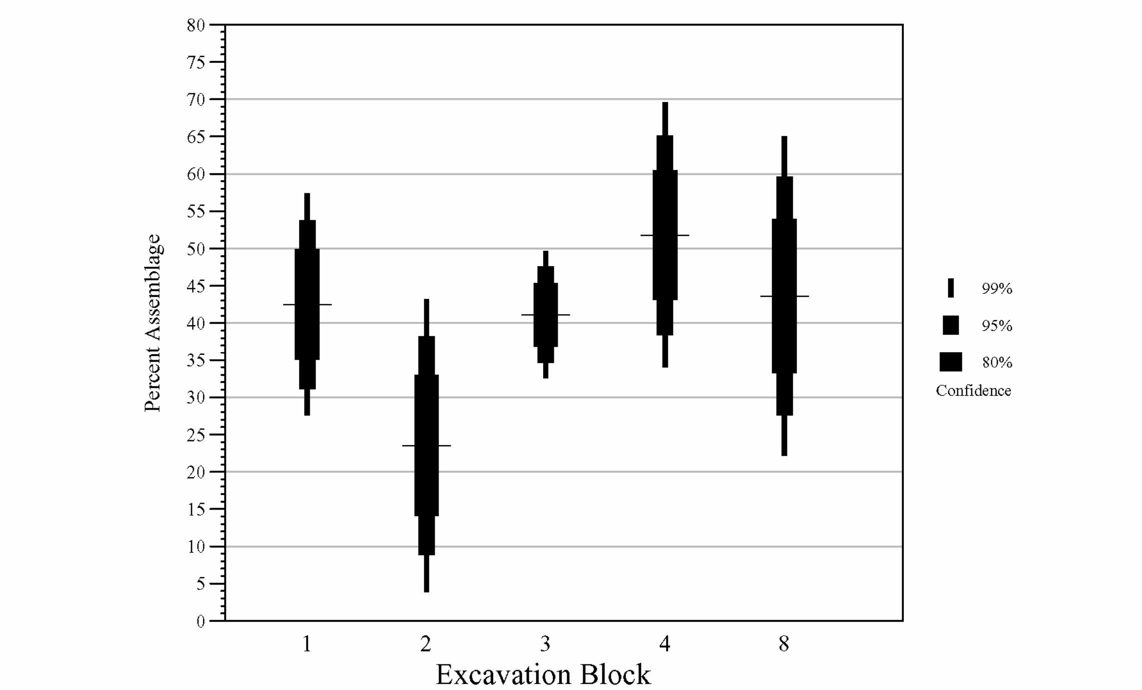

Figure 6.8: Comparison of the relative proportions of all bowl forms recovered from each excavation block.

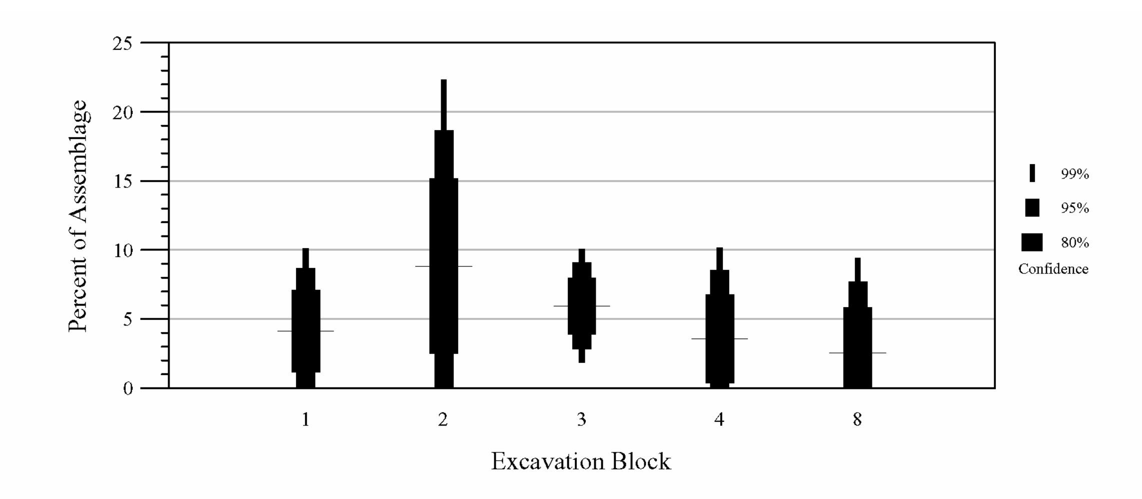

Figure 6.9: Comparison of the relative proportion of miniature bowl forms within each of the excavation blocks.

6.1.4.3 Block 3

Block 3 has a relatively lower density of ceramic material than Blocks 1, 2, and 8, with only 210.8 sherd/m^3. Slightly more than 42% of the examined ceramic sherds from excavated contexts in Block 3 were sufficiently preserved (>2cm in diameter with non-eroded surfaces) to allow for classification with respect to both temper and ware class compared to only 21.4% in Block 2 and 27% in Block 1. This difference is directly related to the assemblages in Block 1 and 2 having very high proportions of sherds smaller than 2 cm in diameter (52.2% and 50.5% respectively) in comparison to the Block 3 assemblage where less than 34% were too small for detailed analysis.

Rough ware accounts for just over 64% of the ceramic assemblage from Block 3 and is primarily tempered with Normal temper, but also has a high proportion of chaff/straw tempered sherds relative to the other temper materials. However, in comparison to the other blocks, Block 3 has a much higher proportions of these other temper materials as well as a significantly higher percentage of non-local ceramics (see Section 6.1.5.1 and Figure 6.16). Also of note is a moderately significant ($0.20 > p > 0.05$), higher percentage of Decorated wares in Block 3 than in the other areas, with 0.21% of the assemblage comprised of C- and D-ware ceramics compared to only 0.10-0.11% in Blocks 1, 2, and 4 (Figure 6.19).

Vessel forms recovered in Block 3 are dominated by bowls and beakers, which combined account for 48.19% of the assemblage. With the exception of Block 2 in which they do not occur, Block 3 has the lowest combined proportion of shallow bowls and platters, although this difference is well within the 80% confidence limits for the estimated proportions of the other blocks (Figure 6.10). Block 3 also has a significantly lower proportion of basins ($0.05> p >0.01$) than do Blocks 1 and 2, while having a much more similar proportion to Block 4 (Figure 6.4). Finally, Block 3 has a higher proportion of bottle forms (2.28 ± 1.98%) than does Block 1 (1.37 ± 2.67%) which is the only other locationfrom which they have been recovered. These vessels are rare at el-Mahâsna accounting for only 1.43 ± 1.17% of the entire ceramic assemblage.[24]

[24] The rarity of bottles at the site may be a factor of their shape and size. Typically, these items have a very small orifice, which when broken into individual sherds may results in these sherds being too small to reliably obtain stance and diameter information and therefore have not been analyzed to the level of determining vessel form.

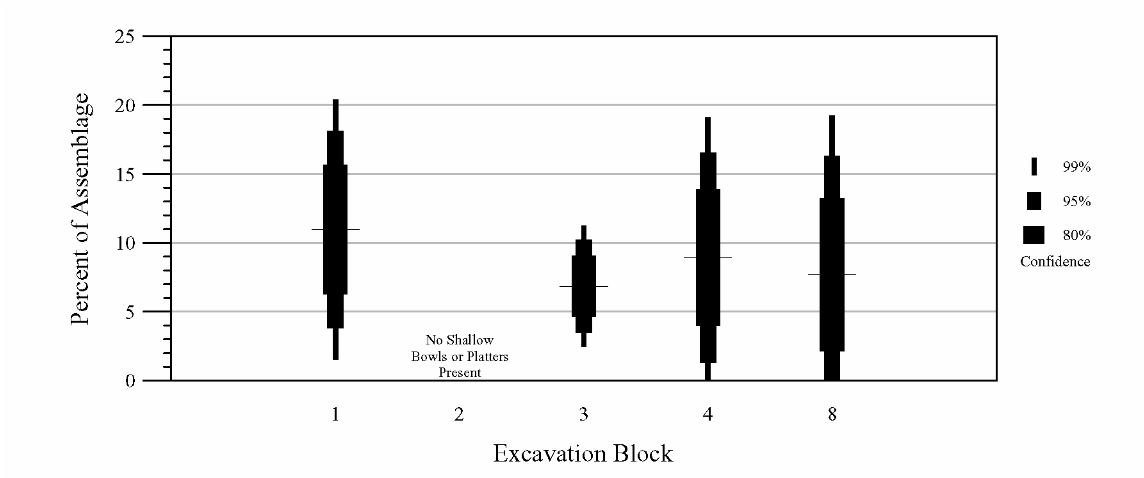

Figure 6.10: Comparison of the combined proportion of Shallow Bowl and Platter vessel forms in each of the excavation blocks.

A total of six complete, or nearly complete, ceramic vessels were recovered from Block 3 (Figure 6.11) including two jars (MAP1394 and MAP2480), two hole-mouth jars (MAP1395 and MAP2741), one basin (MAP2724), and one miniature bowl/drinking cup (MAP1792) These vessels, with the exception of the MAP1792 (see Figure 5.33 above), were all purposely emplaced in pits within floor levels of the large structure identified in Block 3 and presumably served as storage vessels. One of these vessels, the large basin (MAP2724) is notable for the series of roughly evenly spaced, small circular punctates that are executed around the lip surface of the rim (Figure 6.11). These punctates are very reminiscent of similar large vessels with punctates surrounding the rim reported at Adaïma (Buchez 2002:fig 2.8).

6.1.4.4 Block 4

Block 4 has very similar sherd density as Block 3, with just under 200 sherds/m^3. Block 4 is also similar to Block 3 in having a relatively low proportion of the assemblage comprised of sherds less than 2 cm in diameter (30.6%) and a higher proportion of the assemblage for which temper and ware designations could reliably be made (42.4%). Block 4 is very similar to Block 2 in the proportion of Rough, Polished, and Decorated wares present, with slightly more than 57% of the assemblage comprised of Rough ware. These Rough ware ceramics are predominately tempered with Normal temper (55.07%) and chaff/straw temper (38.01%). Other tempers that occur in percentages greater than one-percent include coarse organic, grog, and limestone tempers.

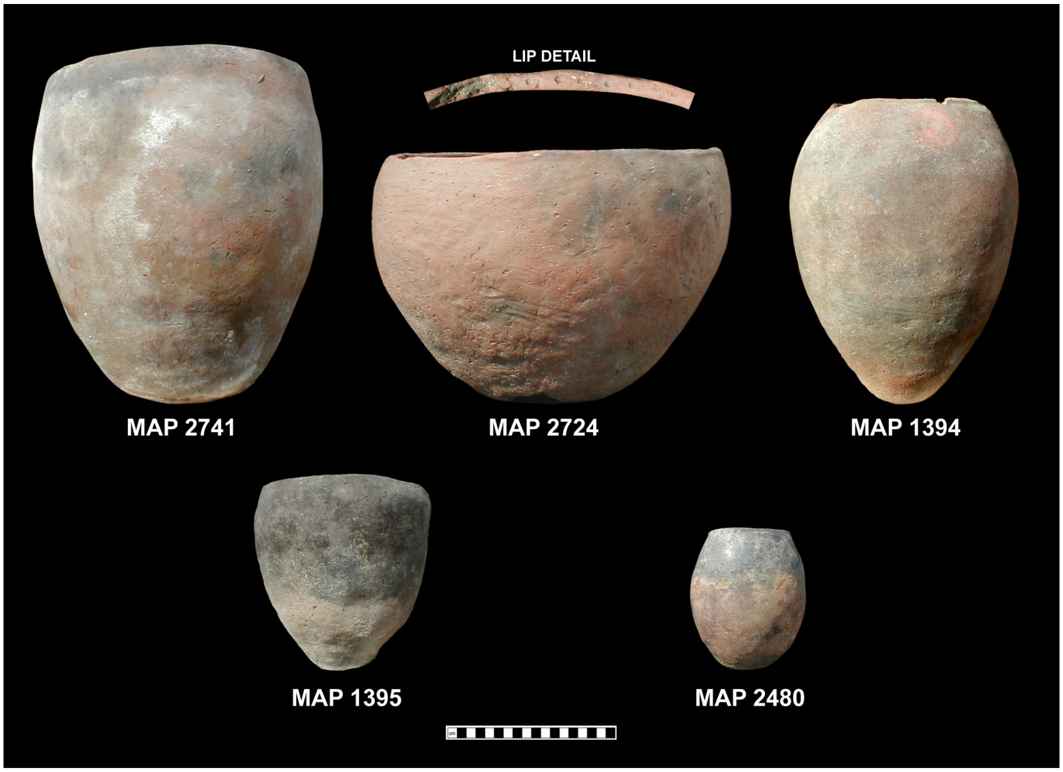

Figure 6.11: Complete ceramic vessels recovered from Excavation Block.

With the exception of bottles and large beakers, all vessel forms were recovered from Block 4. Dominating the assemblage however are bowls which account for 35.71% of the vessel types recovered, 7.5 % more than Block 8 and 8.31% more than Block 1. However, these differences are within the 80% confidence level and therefore are not very significant.

6.1.4.5 Block 8

Located at the southern end of the site, Block 8 is unique in that it is they only excavated area that has been impacted by plowing. Surprisingly though, Block 8 has the lowest proportion of sherds that were considered to be too small for analysis (1.3%), thus indicating that plowing did not significantly increase the number of sherds that were present prior to these impacts as well as suggesting that Block 8 was not an area subjected to large amounts of trampling during its period of use. With respect to sherd density, Block 8 is more similar to Block 1 with a density of 239 sherds/m^3. Analysis of the assemblage in Block 8 reveals that like Block 1, Block 8 has a relatively high proportion of Rough wares at 69.04%, but unlike the other excavation blocks is devoid of Decorated wares.

In comparison to the other areas of the site, Block 8 has a rather unique ceramic assemblage with respect to the tempering agents employed. Block 8 ceramics have a much lower proportion of Normal and Chaff/Straw tempered ceramics than do the other blocks, with a combined percentage of only 64.9% compared to the next closest, Block 3, which has just over 90% of its assemblage comprised of these temper types (Figure 6.12). The reason for this drastic difference is the presence, in relatively large proportions of other tempers that do not occur, or do so in extremely small quantities, in the other areas. These temper types are Sand, Poorly prepared clay, and None, or the lack of tempering which is typically only seen in the non-Rough ware classes of ceramics. These "exotic" temper types occur in relatively large proportions, between 7 and 15.5% of the Block 8 assemblage and may indicate that different activities were taking place in the area in and around Block 8 than elsewhere on the site.

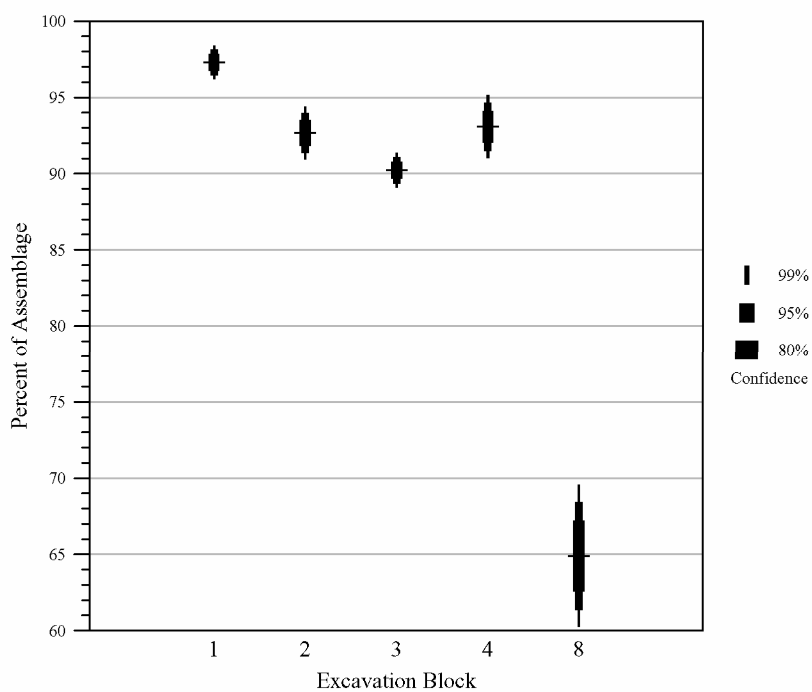

Figure 6.12: Comparison of the relative proportions of Normal and Chaff/Straw tempered R-ware ceramics in each of the excavation blocks.

Vessel forms recovered in Block 8 show higher proportions of bowls, beakers, and jars than other forms, as well as a total lack of bottles, basins and large beakers (Figure 6.1). Block 8 has the highest proportion of all jar forms of any area of the site suggesting that inhabitants of Block 8 were more highly involved in storage activities than those in other areas. Additionally, it is interesting that of the jar forms recovered, modeled rim jars occur at a ratio of 2.25:1 compared to hole-mouth jars, suggesting a greater need for the ability to tightly seal the openings of the jars (Friedman 1994:244-245). A single vessel was recovered in Block 8 and has been previously discussed above in Section 5.2.8.1.

6.1.5 Spatial Distribution of Non-local and Decorated Wares

Of interest in addressing questions of extra-regional interactions and ritual activities by some or all members of the el-Mahâsna community during the Naqada Ic-IIb/c periods is the presence and distribution of ceramic wares originating from outside the Abydos region, as well as those ceramic types/vessels that may have been used in ritual practice or signify elites. This section examines specifically those wares which are believe to have originated in areas both north and south el-Mahâsna and the internal distribution of Decorated wares.

6.1.5.1 Distribution of non-local wares

In Section 6.1.3 above, several temper types and modes of surface decoration were discussed and defined as most likely originating from areas outside the Abydos region. Specifically, these included the following tempers: coarse organic, grog and grog and organics, marl clay and limestone, dung, and shale. Surface decorations that appear to represent non-local origin include regular punctuates as well as pigment filled incisions characteristic of Petrie's N-ware.

Unfortunately, no ceramics that are believed to have originated from either the Predynastic cultures of Lower Egypt or Nubia have been recovered from secure, excavated contexts. However, a total of 5 sherds from these areas have been recovered either from the surface or from within Habitation Phase 3GAR deposits. Three of the five sherds are believed to have originated from Lower Egypt, two of which were found in the southern portion of the site, while the third was recovered in the area of Block 3 (Figure 6.13). The two sherds of Nubian origin were found with one originating in the far southeast portion of the site, and the other from Operation 16, Phase 3GAR.

The surface distribution of wares from the Naqada Khattara sites and from the Hemamieh region are shown in Figure 6.14 and Figure 6.15. Those originating from Hemamieh show several areas of concentration, primarily two zones in the central portion of the site, and another concentration in the areas around Excavation Blocks 3 and 4, with very low concentrations in the entire southern half of the site. Naqada region ceramics on the other hand, show a much more limited concentration with the densest concentration being in the area between Blocks 3 and 4. Two other areas of lesser concentration are halfway between Block 3 and Garstang's Excavation House (Block 7), and the second being a much more diffuse concentration in the southeastern corner of the site where several collection units produced higher concentrations of Naqada wares than their neighbors.

Non-local ceramics recovered from excavated contexts show a much more limited and focused occurrence. When one examines the distribution of all non-local ceramics as a proportion of the entire ceramic assemblage from each block, Excavation Block 3 has a significantly higher proportion ($6.55 \pm 0.72\%$) of these wares than do the other areas, with 2.3% more non-local ceramics than Block 2 and 2.74% more than Block 4 (Figure 6.16). Further, both Blocks 1 and 8 have significantly lower proportions than what is found in Blocks 2-4.

When the distribution of wares from each of the regions is examined separately, a different pattern emerges where Block 3 has proportions of Naqada region wares in quantities that are not significantly different from Blocks 2 and 4 (Figure 6.17), while having significantly higher proportions of Hemamieh region ceramics than any of the other blocks (Figure 6.18). These patterns suggest that Block 3 inhabitants had more interaction with individuals from outside the local Abydos region than did those in the other areas of the site, and further these interactions were focused more to the northern Hemamieh region than to Naqada to the south.

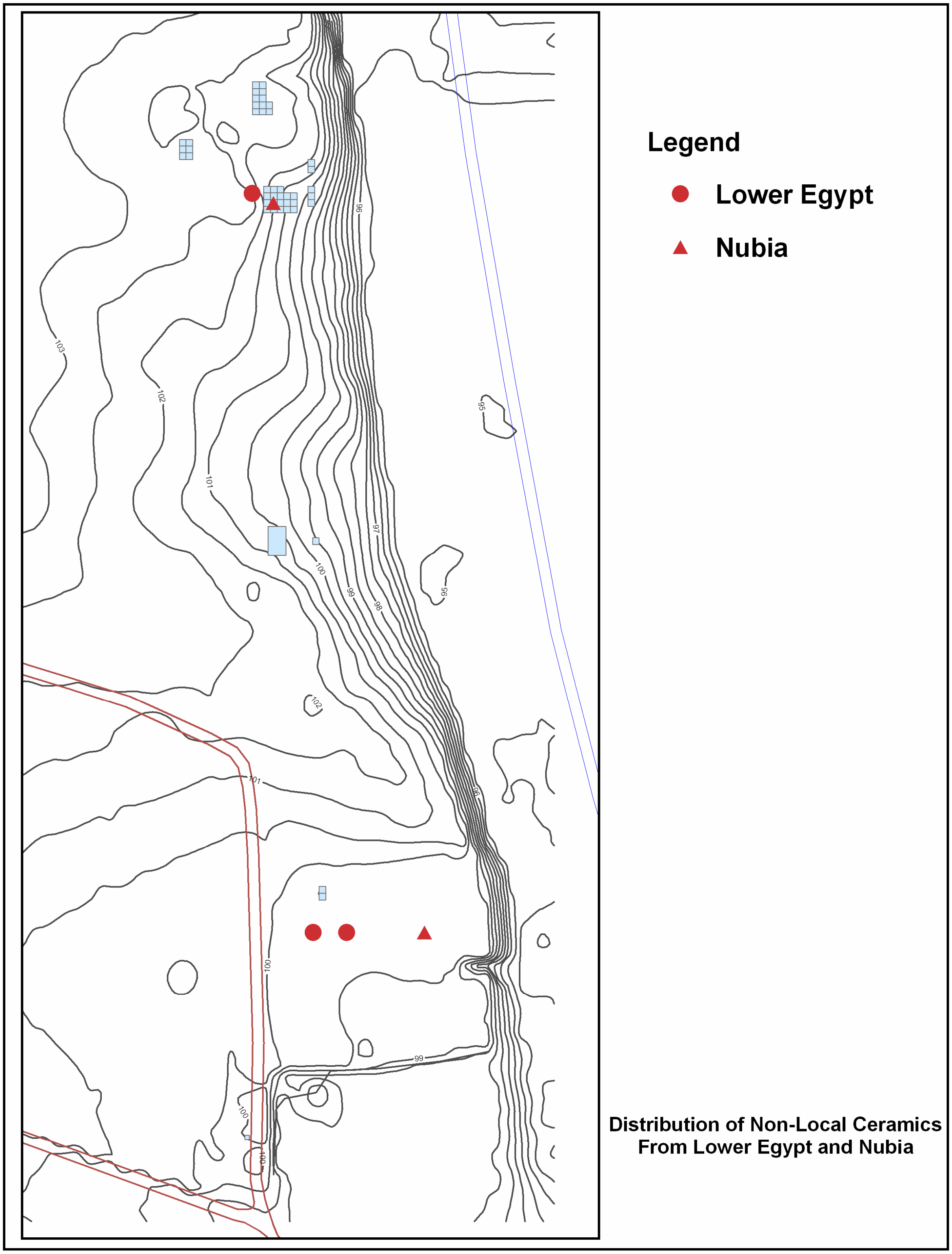

Figure 6.13: Distribution of ceramics from Nubia and Lower Egypt

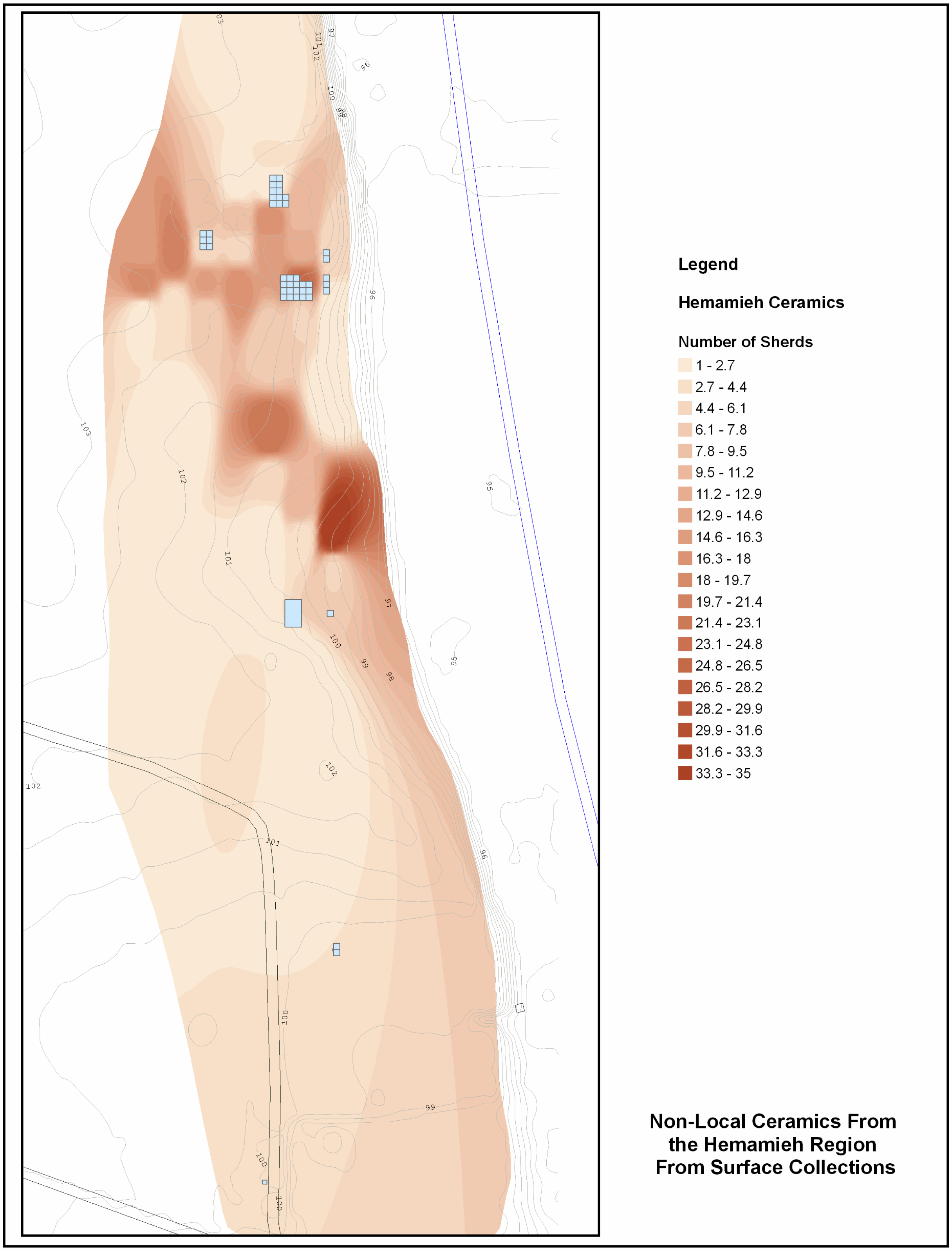

Figure 6.14: Distribution of surface ceramics originating in the Hemamieh Region

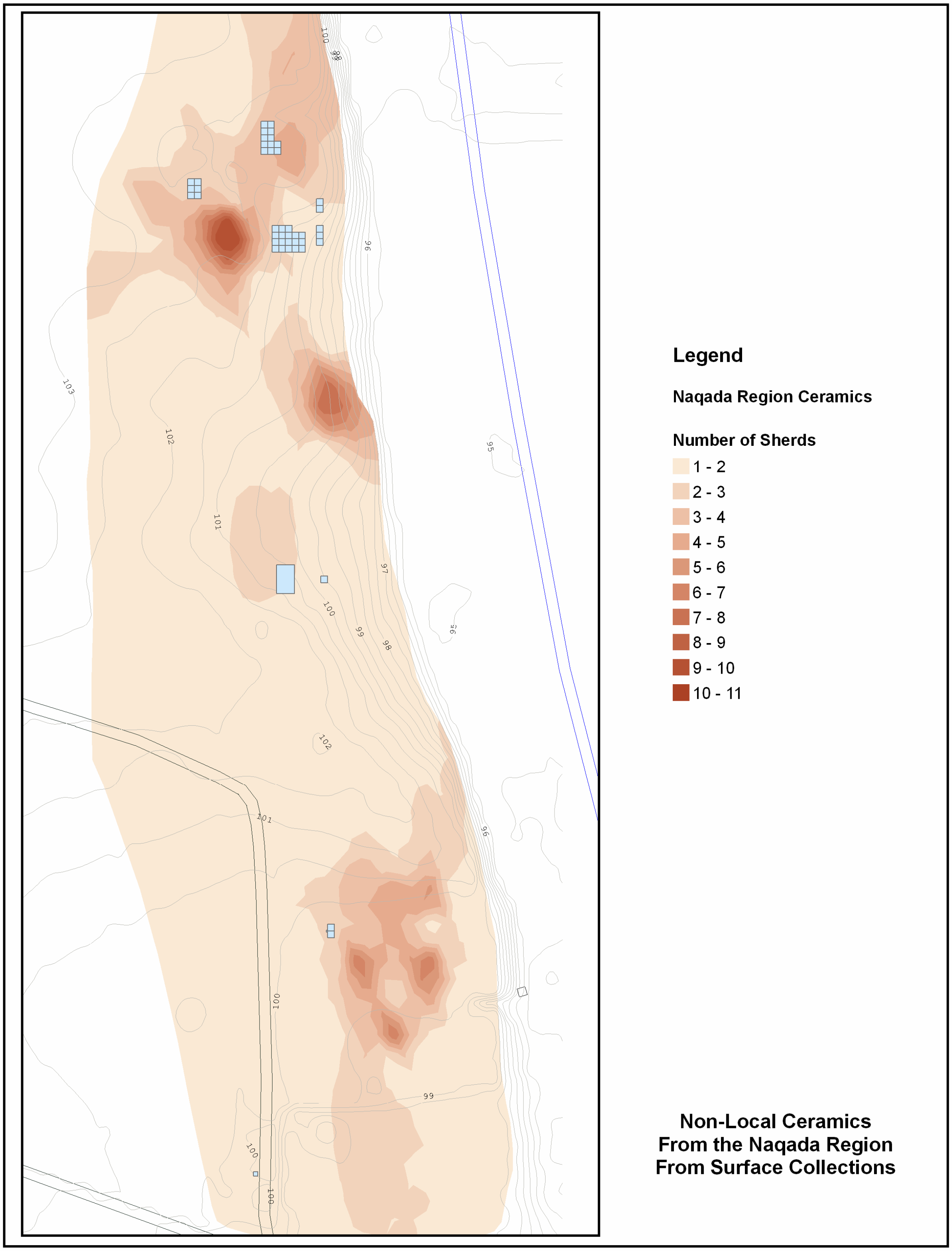

Figure 6.15: Distribution of surface ceramics originating in the Naqada Khattara Sites regions

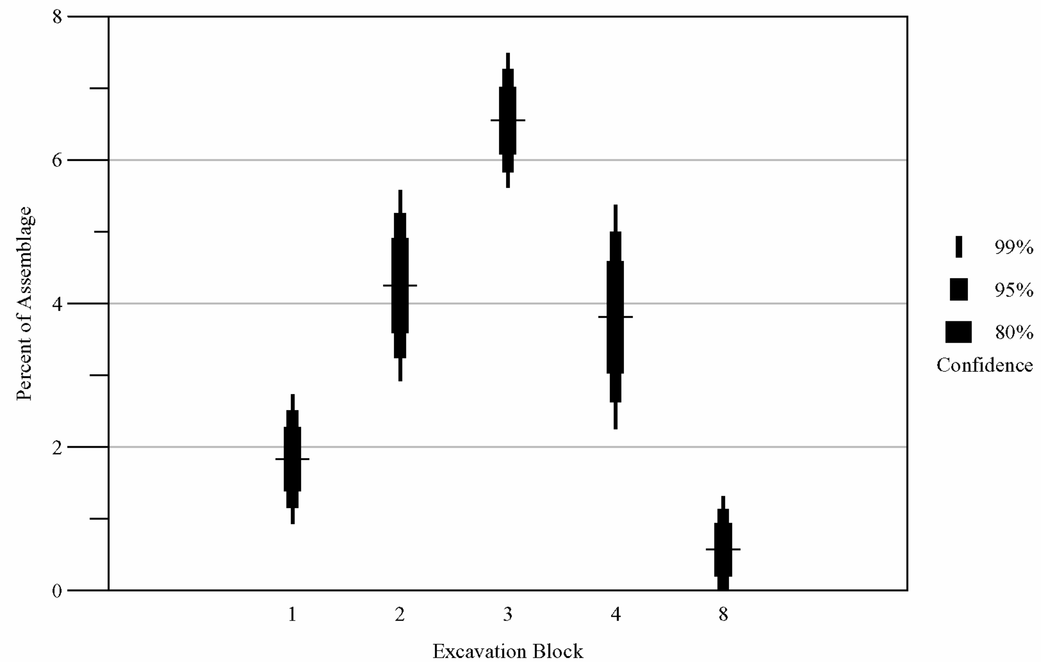

Figure 6.16: Comparison of the proportions of non-local wares in each Excavation Block.

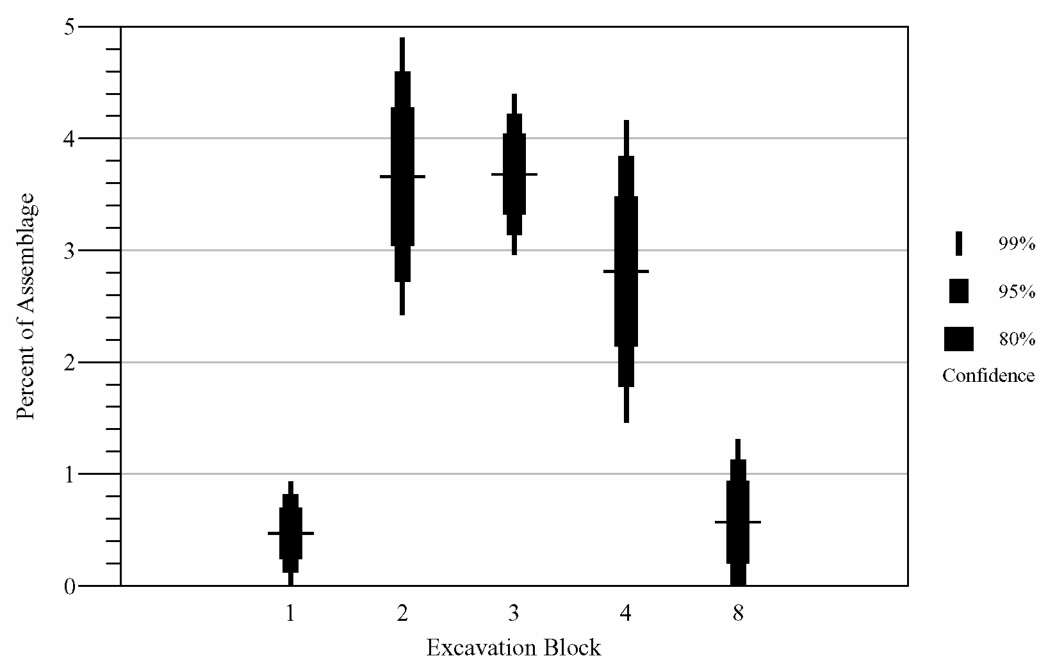

Figure 6.17: Proportion of Naqada Region wares from each excavation block.

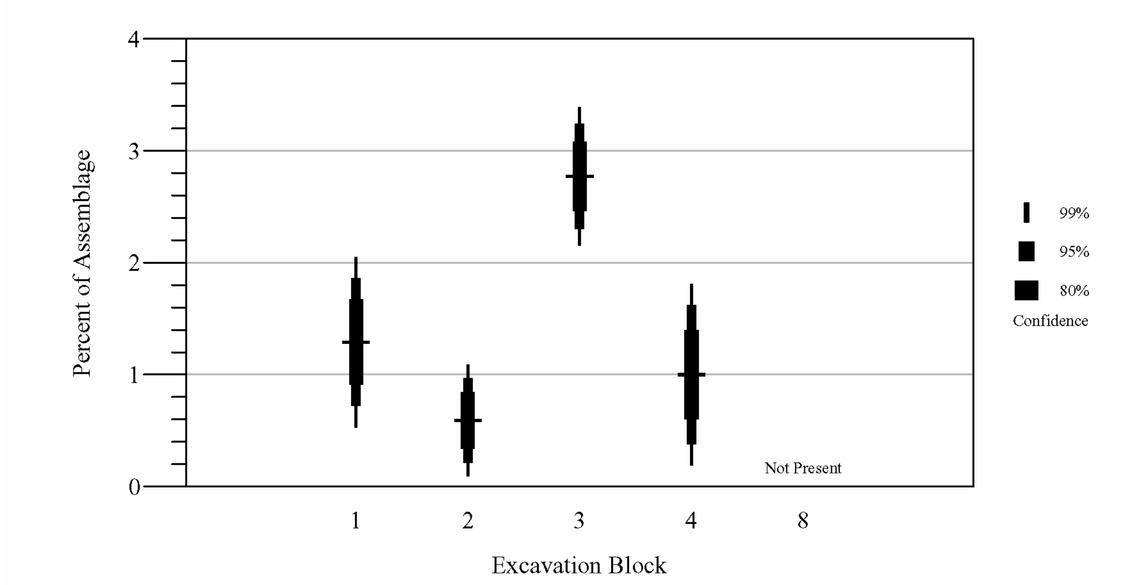

Figure 6.18: Comparison of the proportion of Hemamieh Region wares from each excavation block.

6.1.5.2 Distribution of Decorated Wares

Decorated wares recovered at el-Mahâsna refer to those wares classified by Petrie as White cross-lined or C-ware and Decorated or D-ware. C-ware ceramics represent the decorated wares of the Amaratian or Naqada Ia-Ic and possibly continuing into the early Naqada IIa period, while D-ware ceramics do not appear until the Naqada IIb and continue until the end of the Naqada sequence. In both cases however, the motifs depicted on these vessels include painted decoration that has been interpreted as depicting scenes of ritual significance.

Finkenstaedt (1980, 1981, 1982, and 1985) has extensively studied C-ware ceramics and has concluded that it is possible to define several regional variants of the ware based primarily on stylistic grounds and the images portrayed. Those vessels originating in the Naqada region tend to have more abstract geometric designs and a more "pastoral mood" with depictions of domestic animals, where those from the Abydos region "reflect a far more active, energetic style and presents uniquely the human figure in combinations with wild animals which are not potential domesticates, but life-threatening beasts" (Finkenstaedt 1985:144). She further suggests that "pottery [C-ware] from the Abydos region suggests a magical or magical-religious bias" (1980:120).

D-ware vessels are famous for their depictions of what appear to be dancing figures as well as large boats which are believed to indicate an increase in river-born trade during the Naqada IIb-d periods (Hassan 1988). In some cases the motifs depicted on these vessels are very suggestive of later royal/religious iconography. Like the earlier C-ware, these vessels also appear to have regional styles and studies have suggested that these vessels may have been produced in a limited number of workshops (Aksamit 1992; Smith 1993; Harvey 1987).

The recovery of fragments of these ceramic types is very rare within settlement contexts as they are general more restricted to funerary contexts. The results from the settlement at el-Mahâsna are in agreement with this pattern. Of nearly 99,000 ceramic sherds subjected to rough sorting, counting and examination for decorated wares, only a total of 32 sherds have been recovered to date. Of this number, 23 are C-ware and 9 are D-ware. The larger number of C-ware sherds is likely a reflection of the settlement area having been essentially abandoned by the end of the Naqada IIc. The fragments of C-ware have been recovered from Blocks 1-4, while D-ware has only been identified so far in Blocks 1-3 with six of the eight excavated D-ware sherds originating in Block 3 (Figure 6.21 and Figure 6.22). When one examines the distribution of these wares across the site as a proportion of the total assemblage from each block (Figure 6.19), Block 3 has a higher, though only moderately significant ($0.20 > p > 0.05$), proportion of these decorated ceramics than the other three blocks where they occur. This would suggest that the area of Block 3 may have been more involved with ritual practices than the other areas, a pattern which is supported by other categories of artifacts to be discussed below.

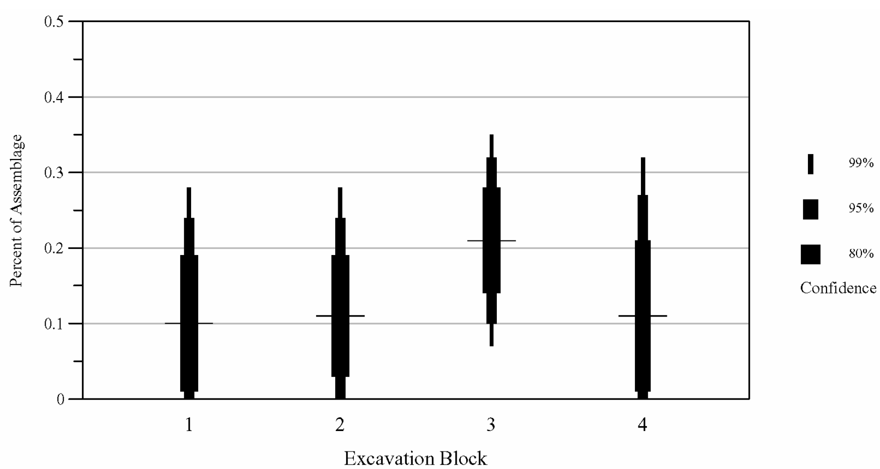

Figure 6.19: Comparison of the proportions of Decorated wares in each of the excavation blocks.

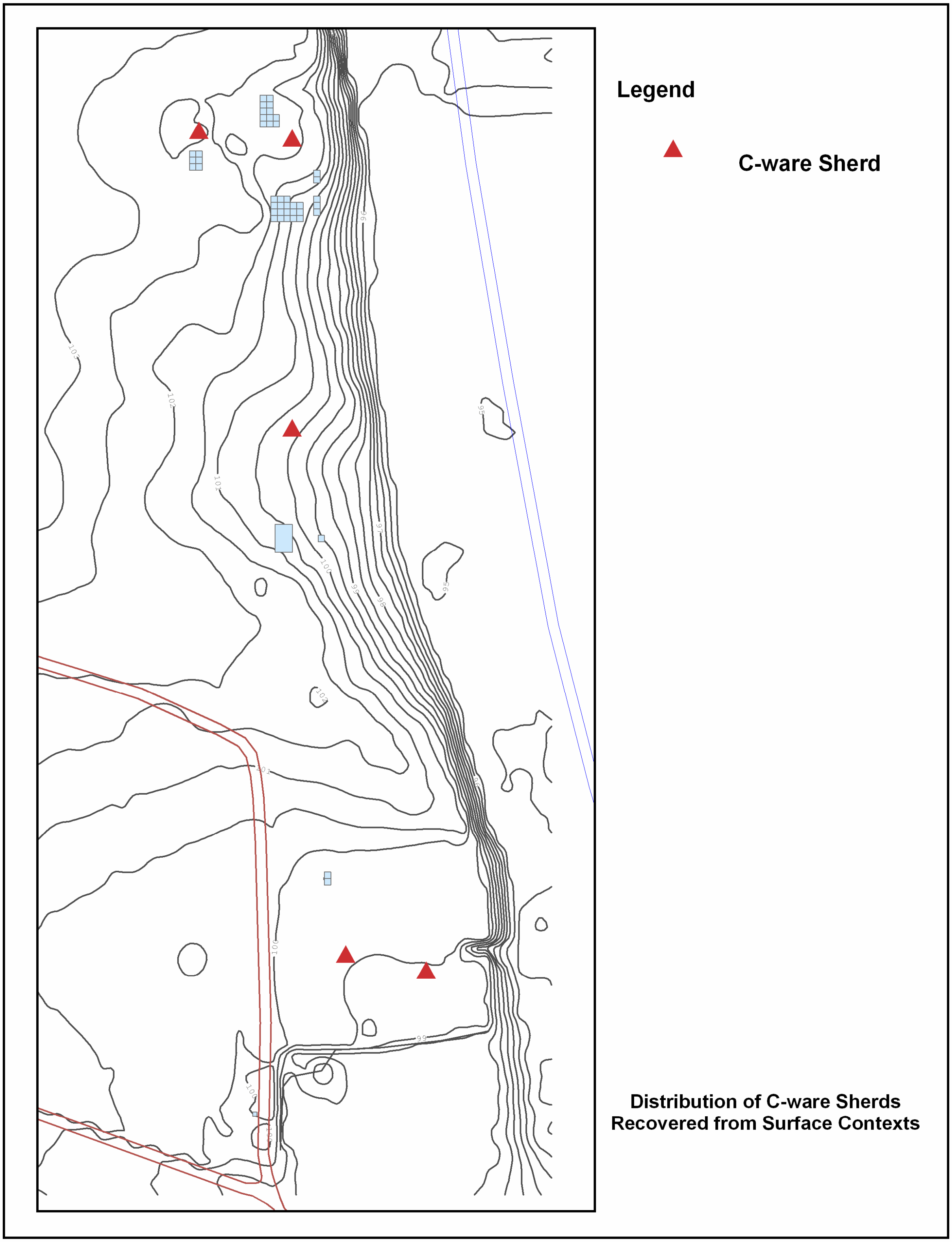

Figure 6.20: Distribution of C-ware ceramics recovered from surface contexts.

Figure 6.21: Selection of recovered C-ware vessel sherds.

Figure 6.22: Selection of recovered D-ware vessel sherds.

6.2 FAUNAL REMAINS

6.2.1 General Nature of the Faunal Assemblage at el-Mahâsna.

Excavations in 2000 at el-Mahâsna resulted in the recovery of over 18,000 fragments of animal bones.[25] Of this total, 5,260 specimens, or approximately 29% were sufficiently preserved to enable identification to at least the level of Order, and in a majority of cases to Family and Genus if not species.[26] Analysis of the faunal assemblage was conducted by Stine Rossel of the Department of Anthropology, Harvard University. The following discussion is based upon raw data provided by Rossel, and it is not intended to be a full discussion of the assemblage as analyzed by her. Rather, this section will focus on the basic nature of the faunal materials and several aspects of the assemblage directly related to addressing the research questions and patterns posed in Section 3.3. The reader is referred to Rossel (2006) for a detailed discussion of the results of the faunal analysis.

At the most basic level, the faunal assemblage at el-Mahâsna is comprised of 61.49 ± 0.97% mammal and 34.62 ± 0.95% fish remains, with the remaining 3.89% represented by remains of reptiles and birds (Table 6.5). This stands in stark contrast to the faunal assemblage at Adaïma (Table 6.6) where nearly 96% of the assemblage is comprised of the bones of mammals with fish accounting for only slightly less than four-percent of the assemblage. The two assemblages further differ in the utilization of reptile species with these playing a slightly larger role at el-Mahâsna than at Adaïma; a difference made even more prominent by the fact that for Adaïma, this category also includes amphibian remains.

[25] This number does not include materials recovered from floatation and micro-screening (<3mm) samples that were taken during excavation, as these samples have not been processed. All faunal materials discussed in this and following sections were recovered through 100% dry screening through 4mm mesh. Additionally, faunal materials recovered from Excavation Blocks 8 and 9, excavated in 1995, are not included in the present analysis, as these materials were not accessible to the faunal analyst at the time of analysis. Finally, while bird remains were identified as such, they were not subjected to more detailed analysis and therefore are not discussed except at the level of Class. Analysis of these materials will be conducted and reported at a later date.

[26] It was possible to assign 9,639 specimens to at least the basic categories of Mammal, Reptile, Fish, and Bird.

When one examines the distribution of animal classes across the site (Figure 6.23) it is readily apparent that fish and reptile remains are present in very different proportions in each of the blocks.[27] In the case of Block 1, fish account for only 23.1 ± 2.63% of the faunal remains, while in both Blocks 2 and 3, fish account for over 35% of the assemblage. Reptile remains on the other hand are represented in greater proportion relative to other classes in Block 4 than in any other area of the site, accounting for nearly 10% (9.68 ± 1.84%) of the faunal remains from this area. Figure 6.24 shows a comparison of the proportions and associated error ranges of the three dominant faunal classes represented in the five excavation blocks. This figure shows that both Blocks 1 and 4 have significantly lower proportions of fish remains in comparison to Blocks 2 and 3 ($p < 0.00001$). Further, Block 4 has a significantly higher proportion of reptile remains than do the other four excavation blocks ($p < 0.000001$). Finally, Block 1 shows a much greater reliance on mammal remains, which comprise nearly 76% of its assemblage, which is over 14% higher than the next highest, Block 4; a difference that is both strong and very significant ($p < 0.000001$). This comparison, while admittedly coarse, demonstrates differential utilization of available species by the inhabitants of el-Mahâsna.

Table 6.5: Basic nature of the faunal assemblage at el-Mahâsna.

Classification	NISP	% of assemblage	Error Range[a]
Mammalia	5,927	61.49%	± 0.97%
Reptilia	351	3.64%	± 0.37%
Pisces	3,337	34.62%	± 0.95%
Aves	24	0.25%	± 0.10%
Total	9,639	100	

[a] Error ranges shown are the 95% level of confidence

[27] While the various distributions etc. for Block 5 are presented in the graphs and tables throughout this section, it should be noted that Block 5 produced a very limited amount of faunal remains (*n*=212) relative to the other areas. Therefore, given the very small sample size relative to the other excavation blocks, few statistically reliable conclusions can be made regarding this area.

Table 6.6: Basic nature of the faunal assemblage at Adaïma.

Classification [a]	NISP	% of assemblage	Error range
Mammalia	21,298	95.68%	± 0.27%
Reptilia [b]	52	0.23%	± 0.06%
Pisces	874	3.93%	± 0.26%
Aves	36	0.16%	± 0.05%
Total	22,260	100	

Source: Van Neer 2002: table 1.

[a] For the purposes of comparison, mollusks were excluded from the data as these have not yet been tabulated in the assemblage from el-Mahâsna.
[b] Includes amphibians.

Table 6.7: Summary of faunal remains recovered during the 2000 Season at el-Mahâsna.

Taxanomic Classification	NISP	% of Class	% of Total Assemblage	Weight (g)
MAMMALIA				
Carnivora	1	0.05	0.02	3
Canidae	1	0.05	0.02	3
Canis sp.	8	0.41	0.15	43
Artiodactyla	5	0.26	0.10	44
medium artiodactyle	19	0.97	0.36	73
large artiodactyle	2	0.10	0.04	20
Sus scrofa	271	13.82	5.15	1947
Hippopotamus amphibius	2	0.10	0.04	538
Bovidae	16	0.82	0.30	85
large bovidae	27	1.38	0.51	342
small bovidae	292	14.89	5.55	1080
Bos taurus	472	24.07	8.97	11987
Ovicapra	471	24.02	8.95	2282
Ammotragus lervia	1	0.05	0.02	41
Ovis aries	173	8.82	3.29	1251
Capra hircus	104	5.30	1.98	626
Gazelle sp.	10	0.51	0.19	73
Antelope	1	0.05	0.02	11
Rodentia	85	4.34	1.62	87
Subtotal:	1961	100.00	37.27	20536
REPTILIA				
Trionyx triunguis	335	99.11	6.37	2776
Crocodylus niloticus	3	0.89	0.06	91
Subtotal:	338	100.00	6.42	2867
PISCES				
Cyprinidae	131	4.42	2.49	
Barbus sp.	86	2.90	1.63	
Barbus bynni	14	0.47	0.27	
Siluriformes	76	2.57	1.44	

Taxonomic Classification	NISP	% of Class	% of Total Assemblage	Weight (g)
Bagrus sp./Clariidae	1	0.03	0.02	
Bagridae/Lates niloticus	2	0.07	0.04	
Bagridae	8	0.27	0.15	
Bagrus sp.	192	6.48	3.65	
Bagrus bajad	6	0.20	0.11	
Auchenoglanis occidentalis	1	0.03	0.02	
Clariidae	353	11.92	6.71	
Clarias gariepinus	8	0.27	0.15	
Heterobranchus sp.	3	0.10	0.06	
Synodontis sp.	1451	49.00	27.58	
Synodontis schall	396	13.37	7.53	
Synodontis serratus	2	0.07	0.04	
Perciformes	22	0.74	0.42	
Lates niloticus	138	4.66	2.62	
Tilapia sp.	67	2.26	1.27	
Tetraodon lineatus	4	0.14	0.08	
Subtotal:	2961	100.00	56.27	
Grand Total NISP	5262		100.00	

Notes: Only those specimens where is was possible to provide a sub-class taxonomic designation are presented here. Therefore the totals for each of the major categories differ from those provided in Table 6.5; Additionally, total gram weights for fish remains were not available at the this time and are therefore not presented.

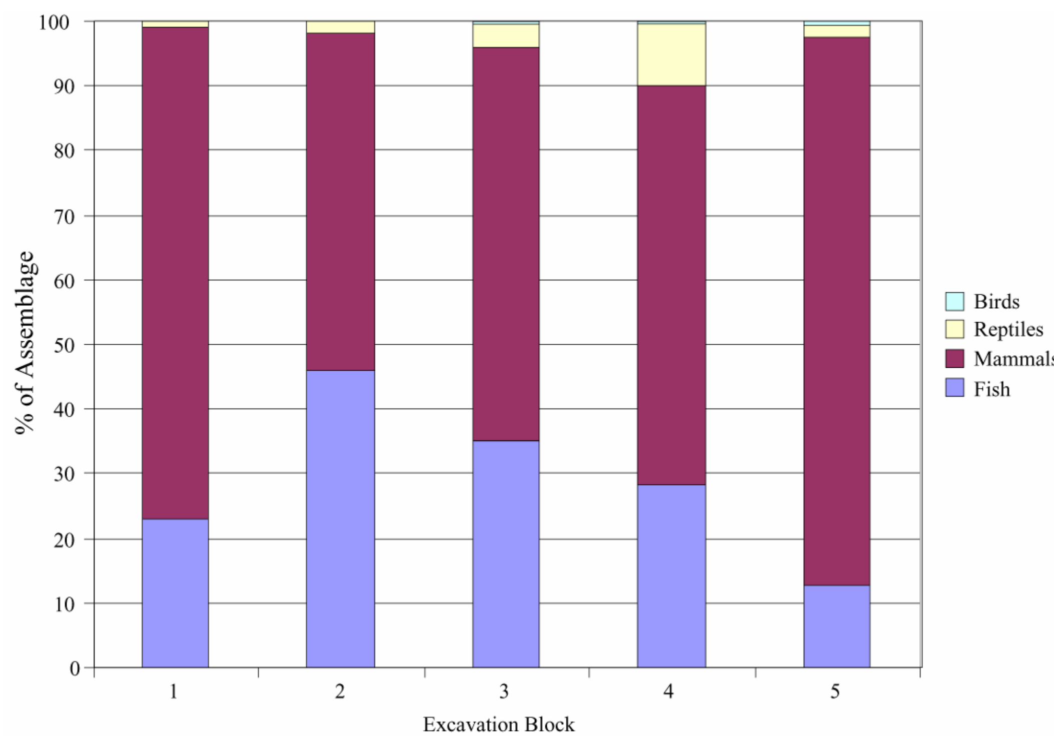

Figure 6.23: Distribution of Faunal Classes Across Excavation Blocks

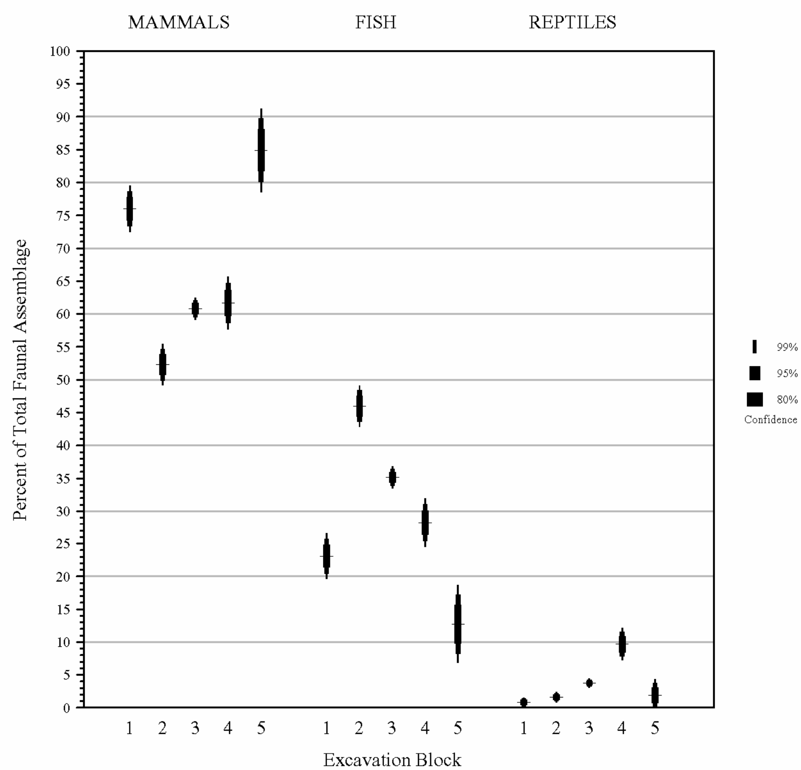

Figure 6.24: Graph comparing the relative proportions of mammal, fish, and reptile remains within each excavation block.

Wild species dominate the faunal assemblage at el-Mahâsna with slightly over 74% of the recovered bones being from wild species. These wild species are dominated by an abundance of aquatic wildlife (97.71%) including various species of fish (89.58%), as well as soft-shelled turtle and crocodile (8.13%), indicating that fishing provided a significant dietary supplement to domestic animals and plant-based foods. Only slightly more than two-percent of the wild faunal species are mammals, and this category itself is dominated by the remains of small mammals, particularly rodents.[28] Figure 6.25 shows the relative abundance of wild versus domesticated fauna within each excavation block. From this figure, it can be seen that Blocks 2 and 4 appear to have a higher reliance on wild species than do Blocks 1, 3, and 5. An examination of the data and comparison with Figure 6.23 reveals that this difference is a direct

[28] These rodent remains are very likely later intrusions and do not constitute dietary refuse.

result of the greater amount of fish and turtle recovered from Blocks 2 and 4 relative to the other blocks.

If one examines only the wild mammal species, i.e. excluding fish, reptiles, birds and rodents, a different picture emerges of the distribution of wild and domestic fauna (Figure 6.26). Figure 6.27 shows the distribution of the percentage of all wild mammal remains for the entire site.[29] Block 3 clearly dominates the site, with 62.52% of all wild mammal remains originating from this area. Specific wild mammal species recovered el-Mahâsna include *Gazelle sp*. (71.43%), *Ammotragus lervia* (common name Aoudad or wild sheep; 7.14%), *Hippopotamus amphibius* (14.29%), and antelope (7.14%). All but a single specimen of *Gazelle sp*. (Block 4) and the single specimen of antelope (Block 1) were recovered from Block 3.

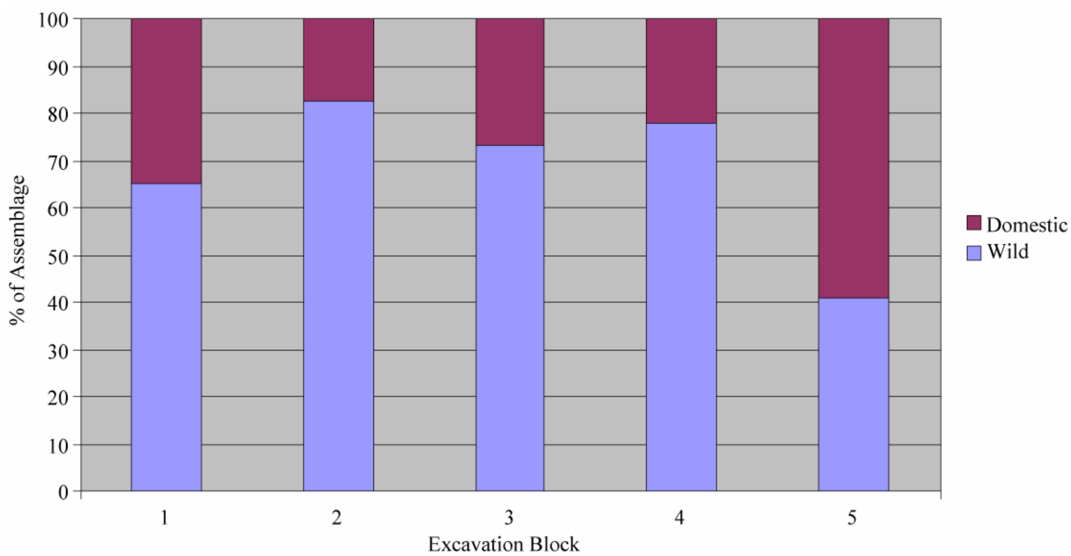

Figure 6.25: Relative Abundance of all Wild and Domestic species in each excavation block.

[29] It should be noted here that whenever the distribution of materials is discussed in this section with respect to proportion of the entire site assemblage of a particular item that these proportions are based on an adjusted quantity that takes into account the differential volume of excavated deposits in each block. These figures were calculated by dividing the quantity recovered from a particular excavation block by the estimated volume of Predynastic period deposits excavated from that block. In the case of Excavation Block 3, those deposits associated with Habitation Phase 3GAR were excluded from volumetric calculations.

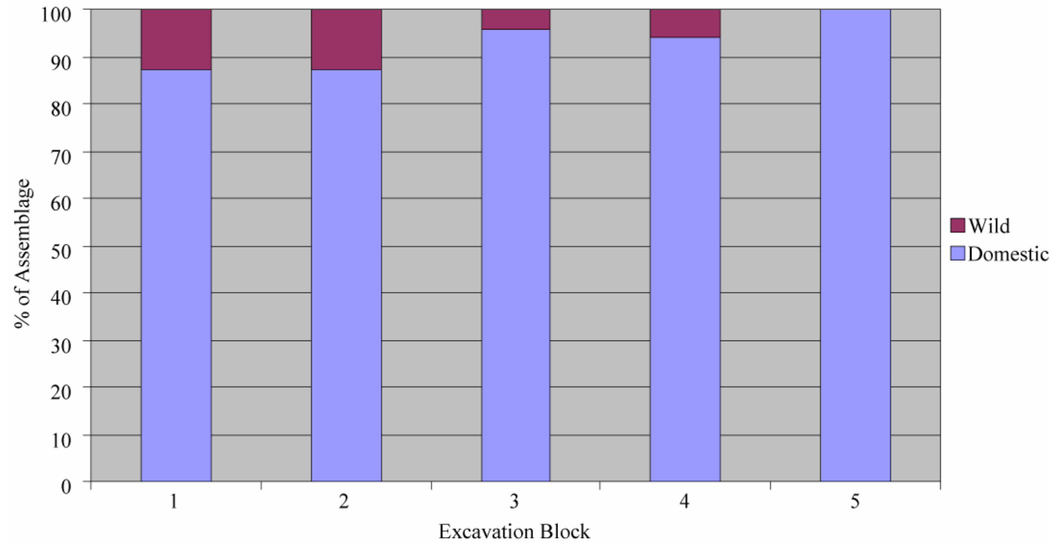

Figure 6.26: Proportions of wild and domesticated mammal remains within each excavation block.

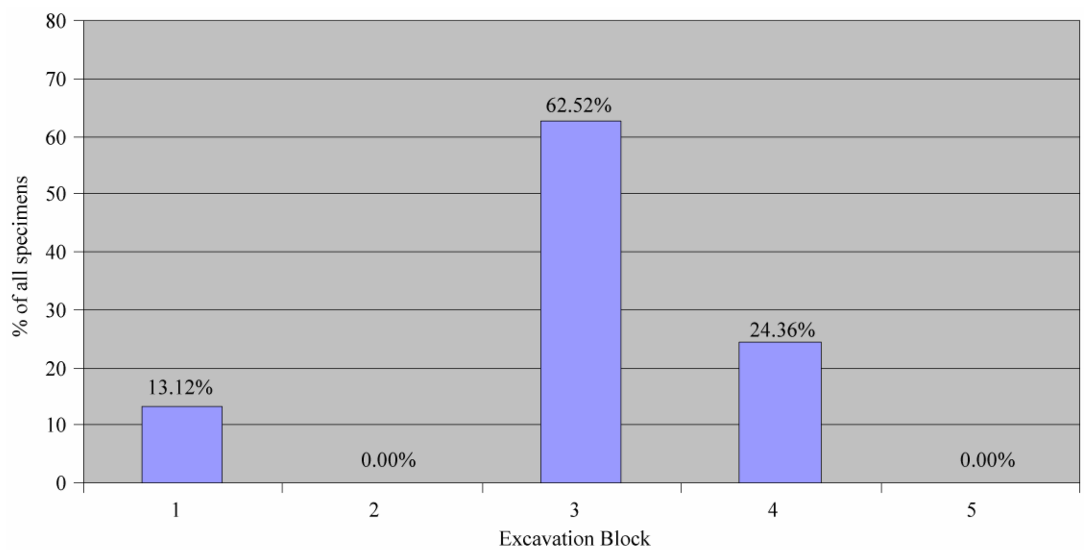

Figure 6.27: Distribution of wild mammal remains, excluding rodents, across the excavation blocks. Proportions have been adjusted to account differences in excavated volume.

6.2.2 Domestic Mammal Assemblage

A total of 1,722 specimens of domestic mammal bone were recovered from deposits dating to the Naqada Ic-IIc phases of the Predynastic during the 2000 excavations at el-Mahâsna. Nearly 77% (*n* = 1320) of these could be definitively identified as being domesticated species, including cattle, sheep, goat, pig, and dog.[30] The relative abundance of these families in each of the excavation blocks can be seen in Figure 6.28. The following discussion of the domestic mammalian fauna focuses upon the spatial distribution of each of the three subfamilies, Bovidae (*Bos taurus*), Suidae (*Sus scrofa*), and Caprinae (Ovicaprids), the age profile of recovered individuals, and finally, the spatial distribution of various body parts of each of the members of these subfamilies.

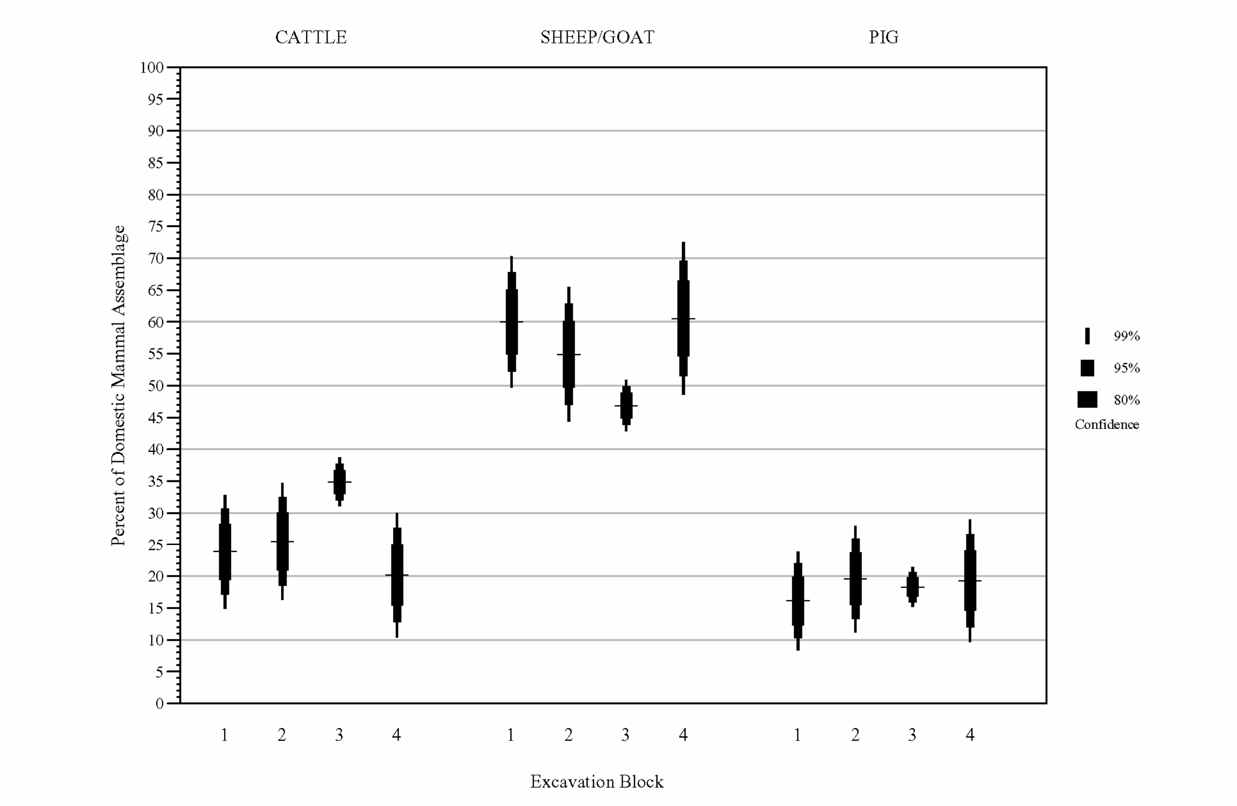

Figure 6.28: Comparison of the proportions of domestic mammal species in each excavation block.

[30] The last of these, *Canis* sp. was only present as five specimens, or 0.38% of the total domestic mammal assemblage. Therefore, it is not discussed further and is not included in any of the calculations and analyses of the domestic faunal assemblage that follow. Further, though while it was possible in many cases to distinguish between the remains of sheep (*Ovis aries*) and goat (*Capra hircus*), in roughly two-thirds of the cases, this was not possible. Therefore all remains of these species whether distinguishable or not have been combined into a single sheep/goat or Ovicaprid designation.

6.2.2.1 Spatial Distribution of Domestic Mammals

As Figure 6.28 demonstrates, cattle are represented in roughly equal proportions (± 5%) in Blocks 1, 2, and 4, with slightly greater proportions in Blocks 1 and 2 than in Block 4. A similar pattern can be seen for sheep/goat, where again, in Blocks 1, 2 and 4, sheep/goat account for a roughly equal proporation of the assemblage, although in this case, Blocks 1 and 4 show slightly higher proportions of sheep/goat than Block 2. Pigs on the other hand make up nearly equal proportions of the domestic mammal assemblage in all four blocks.

Unlike the other excavation areas, however, Block 3 shows strong, significant differences in the proportions of both cattle and sheep/goat present in this area. The relative percentage of sheep/goat remains (46.85 ± 3.04%) is slightly more than eight percent less than that in the next closest distribution, namely Block 2 (54.9 ± 7.97%); a strong, and significant difference ($0.01 < p < 0.05$). Further, there is a strong and very significant difference in the percentage of cattle in Block 3 compared with the other blocks ($p < 0.01$), with Block 3 having a 9.36% higher proportion of cattle remains (34.85 ± 2.91%) than either Blocks 1, 2, or 4 (Figure 6.28). Of further note, when adjusted for excavated volume, just over 35% of all cattle remains at el-Mahâsna were recovered from Block 3 contexts which had an overall density of 2.41 specimens/m^3 compared to the next highest density of 1.64/m^3 in Block 2. While showing some variation, sheep/goat remains on the other hand, have a more even distribution across the various excavated areas. Finally, an examination of the ratios of cattle to the other domestic mammals reveals that Block 3 displays much higher ratios than any other block, as well as in comparison to the site as a whole (Table 6.8).

Table 6.8: Ratios of cattle remains to the remains of other domestic mammal.

Excavation Block	Cattle:Sheep/Goat	Cattle:Pig	Cattle:Sheep/Goat and Pig
1	0.37	1.25	0.283
2	0.47	1.17	0.337
3	0.90	1.72	0.591
4	0.35	1.05	0.264
Entire Site	0.71	1.57	0.487

6.2.2.2 Distribution of Age Classes for Domestic Mammals

Six age classes were distinguished for the domestic mammal remains in the el-Mahâsna assemblage: fetal-infant, neonatal, juvenile, subadult, adult, and finally older or aged adult. Figure 6.29 shows the relative proportions of these age classes for all domestic mammals within each excavation blocks, as well as for the entire domestic mammal assemblage at el-Mahâsna. The pattern revealed at el-Mahâsna is very different from those seen at other Predynastic sites where faunal data has been published. The el-Mahâsna assemblage has a surprisingly skewed profile towards animals of fetal – juvenile ages, with over 63% of these younger animals originating from Blocks 2 and 3.[31] The age distributions for these same species as reported for Localities 11 and 29 at Hierakonpolis (McArdle 1992; Yokell 2004:fig. 6.1) show age profiles more heavily weighted toward juvenile through adult age mammals in the case of Locality 11 and subadult through mature adult individuals at Locality 29. In both cases, there is a near lack of newborns (<5%) and juvenile (<10%) age individuals. These age profiles for Locality 11 and 29 have been interpreted as indicating that pigs were not slaughtered until reaching their maximum body size and that cattle, as well, were allowed to reach maximum body size, and in the case of females to have outlived their productive milk producing years prior to slaughter. Further it is believed that cattle were maintained more for their milk and traction purposes rather than for meat (Yokell 2004:68). Again, in both cases, the age profiles have been interpreted as signifying that while the distribution of ages for sheep/goat at the two locales were different, in both cases, animals were being allowed to attain mature, to near-mature, body size prior to slaughter and use for meat. As was already stated, this is a much different pattern than that at el-Mahâsna. In contrast to Hierakonpolis Localities 11 and 29, Redding and Hunt (2005) note a pattern much more similar to el-Mahâsna for Giza pyramid settlement. They report that 80% of cattle died before the age of 16 months and 90% of sheep/goat were killed prior to 10 months of age.

[31] It is possible that this skewing may be the result of the ability to better state ages of younger animals based on epiphyseal fusion then in animals once fusion has taken place; thus younger animals would appear to be over represented in the assemblage. This may not be the case at el-Mahâsna. The bones of very young animals are the most susceptible to poor preservation given the structural density of many of the elements. However, bones of these invididuals are well represented at el-Mahâsna, as are other more fragile fish bones, demonstrating the overall good preservation of the faunal remains, thus suggesting that the pattern of age classes seen is a reflection of past usage, rather than analysis techniques.

An analysis of the distribution of age classes within each species of domestic mammal reveals a strikingly high incidence at el-Mahâsna of very young (fetal – infantile) cattle (Figure 6.30). In fact, 61.85% of all cattle remains for which it was possible to assign an age class are from these very young classes. Nearly 40% of these very young cattle originate in Block 3 deposits where they account for 22.7 ± 3.71% of assemblage (Figure 6.31). In Block 2 very young cattle comprise 18.18 ± 8.79% of the assemblage, while in Blocks 1 and 4, they comprise less than 15% of each assemblage. While the difference in the proportion of young cattle between Blocks 2 and 3 is not very strong nor significant, the nearly 8% higher proportion of very young cattle in Block 3 when compared with Block 4 is strong, and moderately significant ($0.10 < p < 0.11$).

The distribution of age classes of sheep/goat is very similar to that discussed for cattle, with again the majority of individuals falling in the fetal-infantile age classes (Figure 6.30, center). Unlike cattle (28.15%) though there is a greater representation of juvenile and subadult age sheep/goat (42.29%). Further, the majority (32.43%) of these very young individuals were recovered from Block 2, rather than Block 3. Over 37% of the sheep/goat recovered from Block 2 are very young age individuals. This is nearly 12% higher than in Block 4 where the only 25.93 ± 11.93% of the individuals are from these age classes, a difference that is both strong and statistically significant ($0.05 < p < 0.10$). Aside from Block 2, the other three blocks; namely 1, 3, and 4, have roughly equal proportions of very young sheep/goats.

Finally, the age distribution for pigs is very different from both cattle and sheep/goats (Figure 6.30, bottom). While still focused on younger animals, the age classes for pig show much higher proportions of juvenile and subadult aged individuals than either cattle or sheep/goats. In fact, juvenile age individuals out number those of the very young classes, accounting for 35.34% of the assemblage while the very young categories combined account for approximately 30% of the assemblage. Blocks 1, 2, and 4 have nearly equal proportions of young pigs, while Block 3 has a slightly higher proportion; that while statistically significant, is only 2.7% higher than the next highest proportion which is found in Blocks 1 and 2.

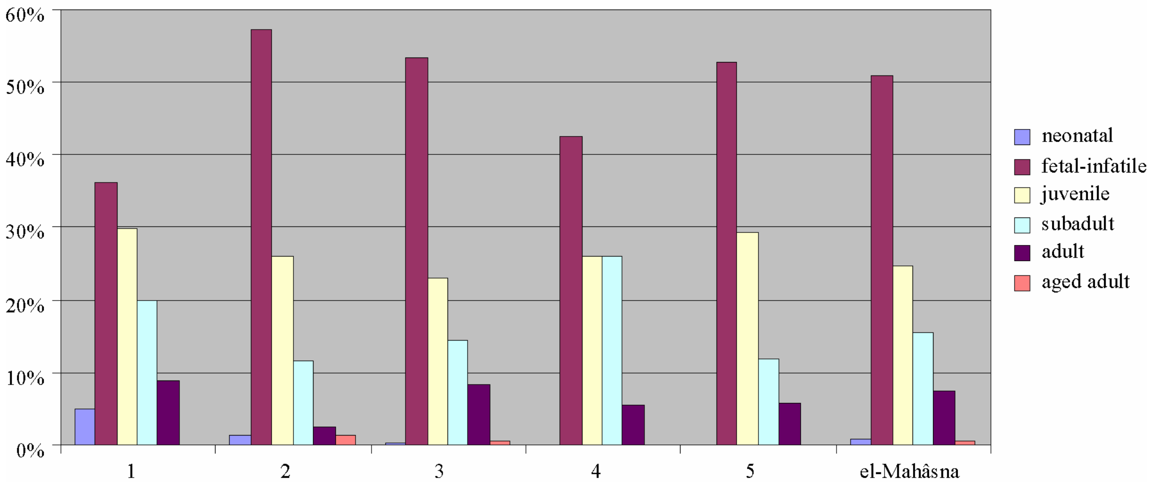

Figure 6.29: Relative abundance (as percentage) of the various age classes for each excavation block and the entire site.

6.2.2.3 Distribution of Body Parts of Domestic Mammals

In order to investigate a possible differential distribution of preferred meats throughout the settlement at el-Mahâsna, the distribution of body parts of domestic mammals was investigated. The animal body was divided into seven categories of body parts: skull, neck, rib cage/fore-body, forelimbs, hind limbs, lower spine, and finally pelvic girdle area. A key indicating which skeletal elements were included in the individual body part categories is provided in Appendix C. Figure 6.32 shows the relative proportion of body parts for each of the excavation blocks as well as the entire site for each of these three families of domestic mammals. From this graph it appears that skulls dominate the assemblages in each block as well as the entire site. However, this pattern is heavily influenced by inflation caused by individual teeth counting the same as entire mandibles or large skull fragments, and therefore the actual relative proportion of skull remains is likely much lower than that shown. Nevertheless, Blocks 1 and 4 still apparently have higher combined proportions of medial parts (heads, necks, spine and pelvic girdle areas) than do Blocks 2 and 3 which have much higher proportions of limbs. It is significant to note here that it is the forelimbs which are most frequently shown being offered to the gods and deceased individuals in offering scenes (Ikram 1995:129). Further, the forelimbs typically are considered to have the choicest meat compared to medial parts of the body

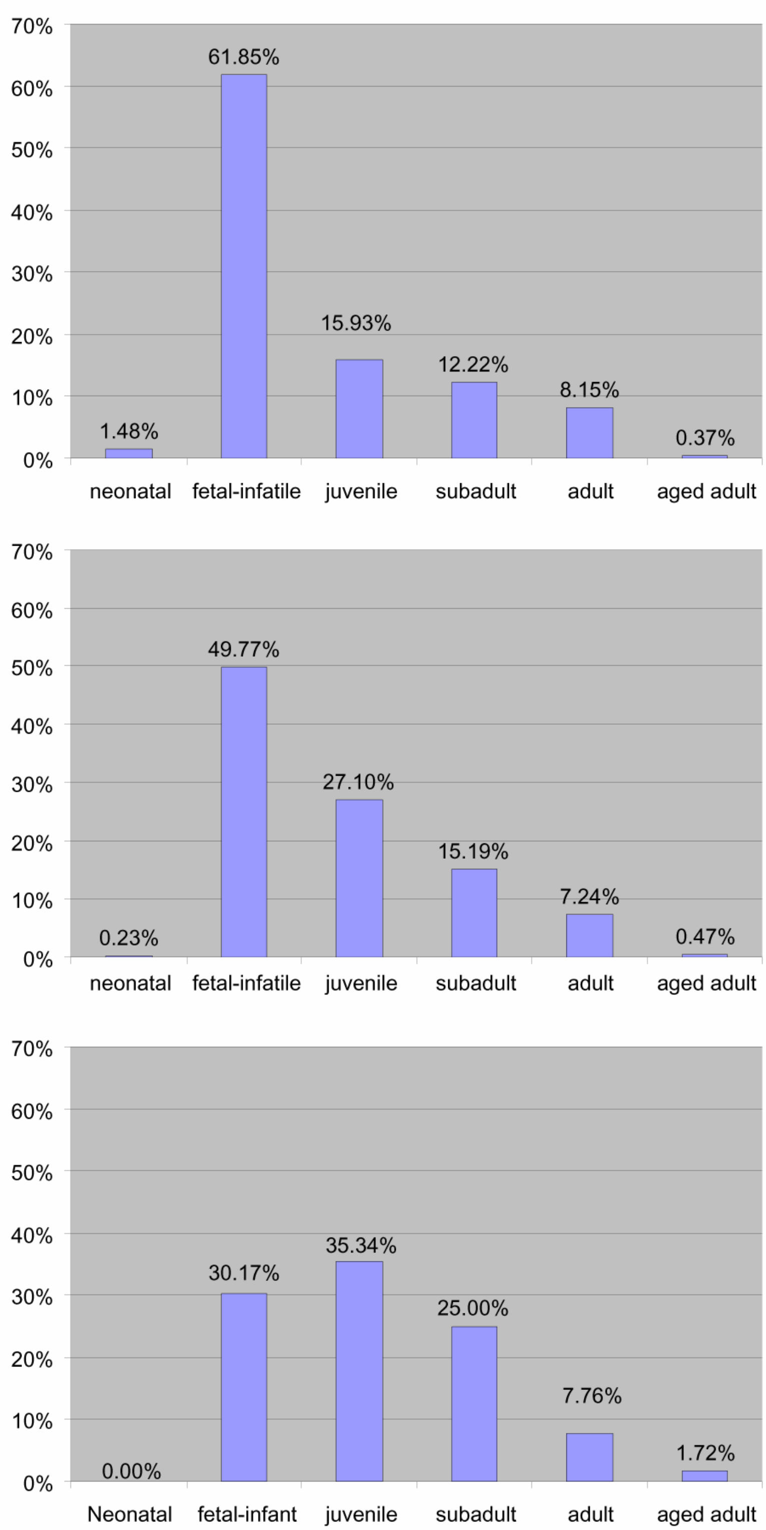

Figure 6.30: Age profile graphs for cattle (top), sheep/goat (center), and pig (bottom).

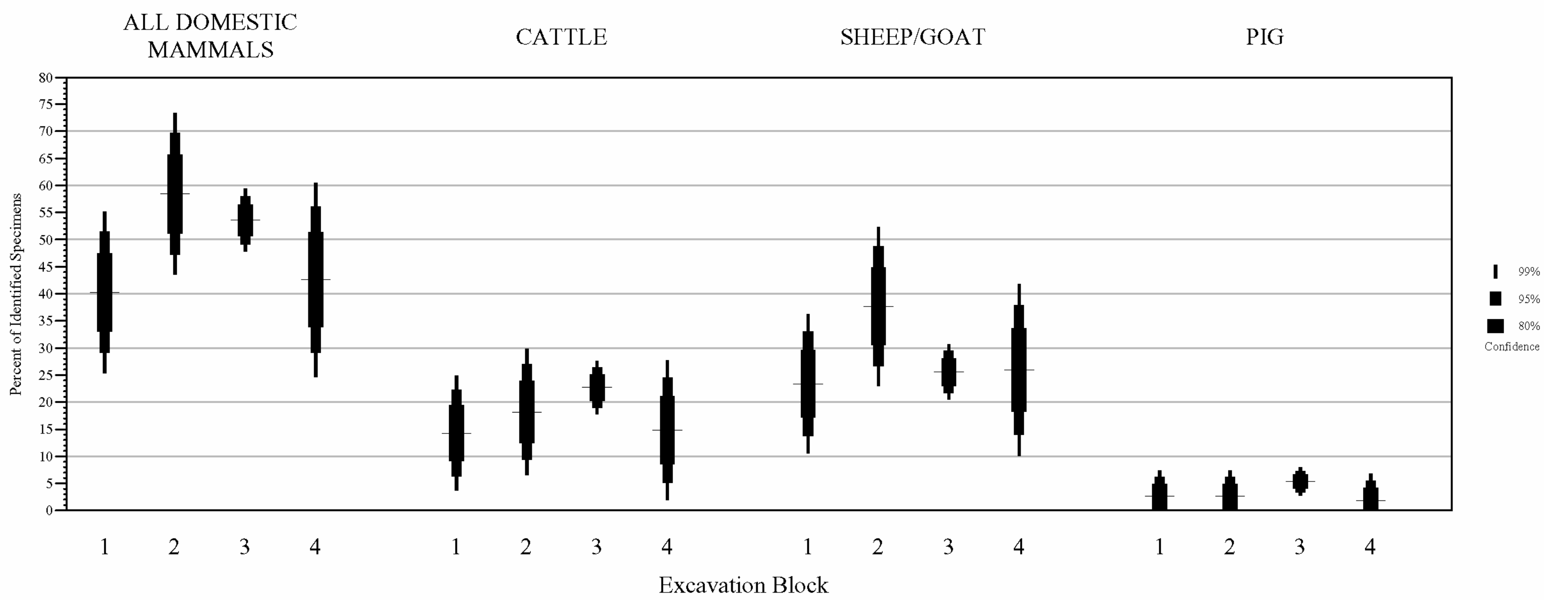

Figure 6.31: Comparison of the proportion of very young domestic mammals relative to all specimens identified to age class within each excavation block

when traditional butchering practices are used and still fetch the highest price for meat in local village markets in the Abydos area today (H. Abdurman personal communication 1995). Based on the apparent differential distribution of medial versus limb elements, the spatial patterning of fore- and hind limbs was examined to determine if there was differential access to choice cuts of meat by some individuals of the el-Mahâsna community.

Figure 6.33 and Figure 6.34 present the distribution of forelimbs and hind limbs at el-Mahâsna for all three families of domestic mammals. These figures demonstrate that forelimbs make up a significantly higher proportion of the assemblages in Blocks 2 and 3 than in the other areas. Hind limbs on the other hand, while showing some variation, do not significantly differ from one block to another. This suggests that while hind limbs were differentially available to certain locales at el-Mahâsna, access to these body parts was not as restrictive as forelimbs appear to have been. An even more interesting pattern emerges when one examines the distribution of these body parts on a species-by-species bases.

The distribution of cattle forelimbs (Figure 6.33) reveals that these particular body parts account for a significantly higher proportion of the Block 3 assemblage compared to the other blocks. At 12.69 ± 2.35%, forelimbs occur nearly twice as frequently in Block 3 than in Blocks 2 and 4, a very strong and very significant ($p < 0.01$) difference, and over four times as frequently than in Block 1. In fact, when adjusted for volume of excavation, 46.04% of all cattle forelimbs originate in Block 3, and 22.13% from Block 2.

A very different pattern is present in the distribution of sheep/goat forelimbs. In Block 2, 20.63 ± 7.14% of the identified body parts come from sheep/goat forelimbs (Figure 6.33), more than 6.5% higher than in Block 3, and 7.85% higher than in Block 1. Block 4 has the lowest percentage of sheep/goat forelimbs, at only 8.33 ± 5.27% of the assemblage. The strong and statistically significant higher proportion of sheep/goat forelimbs in Block 2, again, demonstrates a pattern of restricted access to this cut of meat.

Finally, an examination of the distribution of pig forelimbs reveals a near equal proportions across the blocks, ranging from as little as 3.01 ± 2.93% in Block 1, to as high as 6.48 ± 4.69% in Block 4. In summary, it is apparent that the distribution of cattle and sheep/goat forelimbs was much more restrictive than that of pig. Further, this restricted access appears to be primarily limited to Excavation Blocks 2 and 3. While these body parts are represented in

Blocks 1 and 4, it is in much more limited frequencies, especially in Block 1 which has the lowest concentration of forelimbs of any species.

The distribution of hind limbs, while slightly restricted does not appear to be as restricted as that of the forelimbs just discussed. In fact, when one examines the distributions of the individual species (Figure 6.34), no particular excavation block stands out as having a much larger proportion of this body part than any other.

6.2.3 Fish Assemblage

The assemblage of fish remains recovered from el-Mahâsna is dominated by the various species of catfish that inhabit the Nile River (Table 6.9). Also represented in the assemblage, in descending importance are, cyprinids, particularly *Barbus* (carps); Nile Perch (*Lates niloticus*); Tilapia (*Tilapia sp.*); perch/tilapia, and puffer fish (*Tetraodan lineatus*). A detailed breakdown of the fish remains by species and excavation block is provided in Table 6.11. This section focuses on several aspects of the fish assemblage, namely the spatial distribution of various species as well as the distribution of size classes within select species. For a full discussion of fishing at el-Mahâsna and the environmental implications of these remains, the reader is referred to Rossel (2006).

Table 6.9: Basic nature of the fish remains from el-Mahâsna.

Common Names	*N*	%[a]
Catfish	2273	83.6 ± 1.39
Carp	226	8.31 ± 1.04
Perch	128	4.71 ± 0.80
Tilapia	66	2.43 ± 0.58
Perch/Tilapia	22	0.81 ± 0.34
Puffer Fish	4	0.15 ± 0.14

[a] Error ranges shown are for the 95% level of confidence

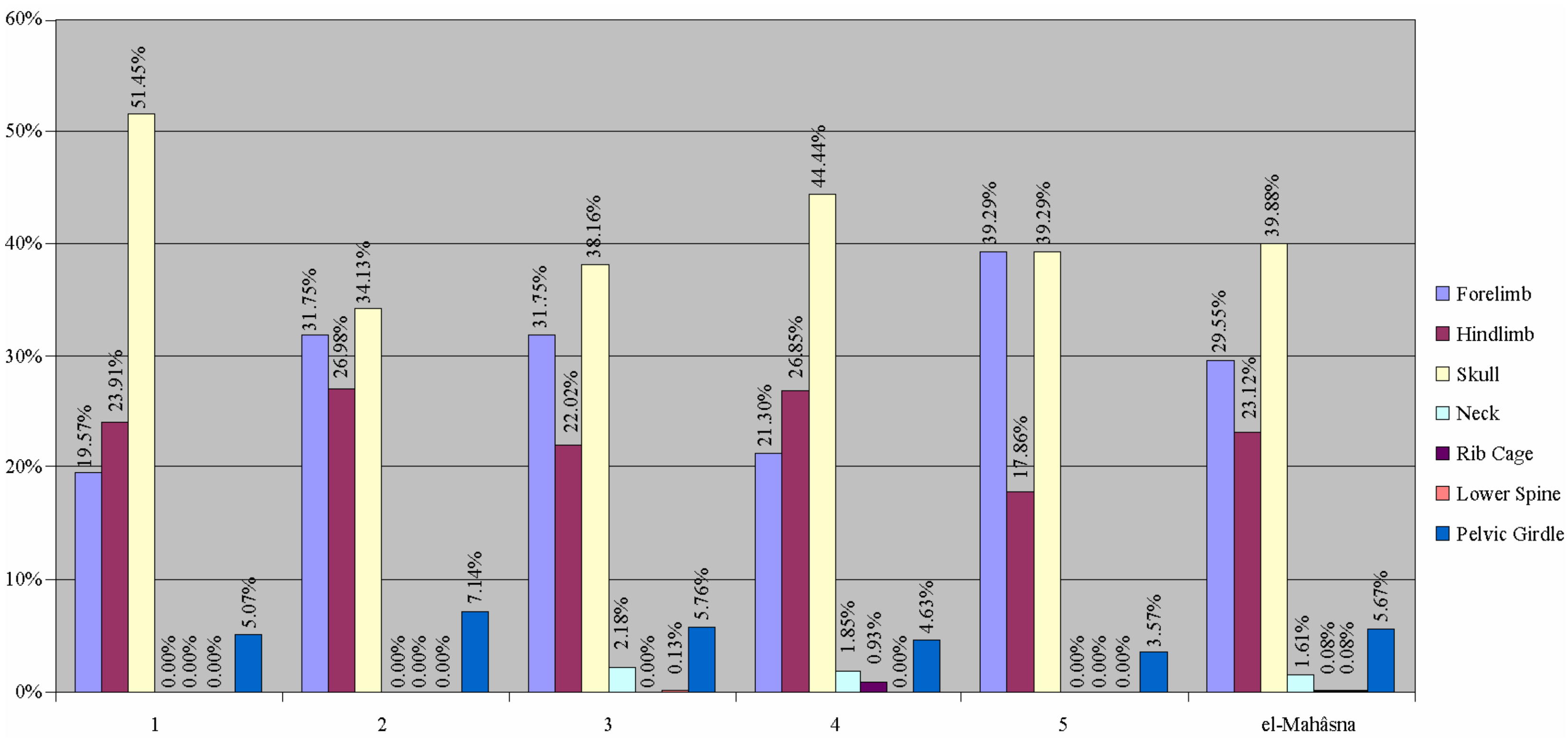

Figure 6.32: Proportions of body parts of domestic mammals in each excavation block.

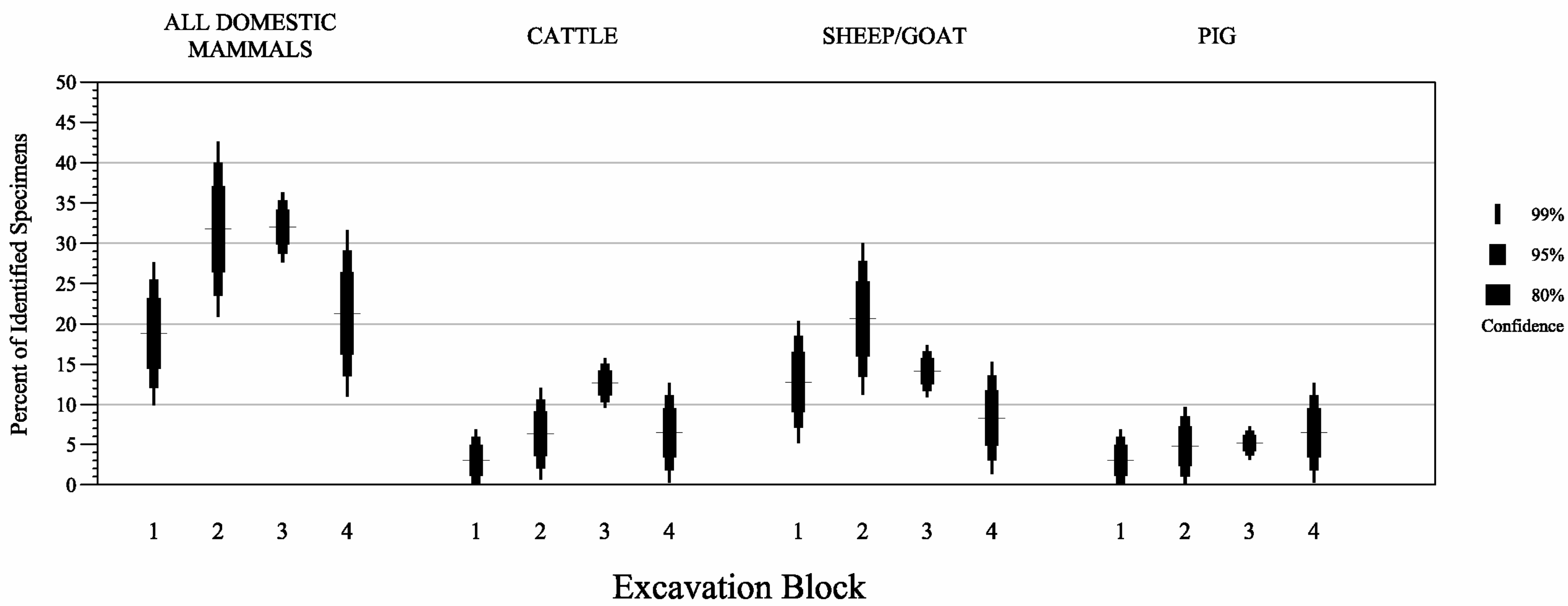

Figure 6.33: Comparison of domestic mammal forelimbs as a percentage of the identified skeletal elements of each species.

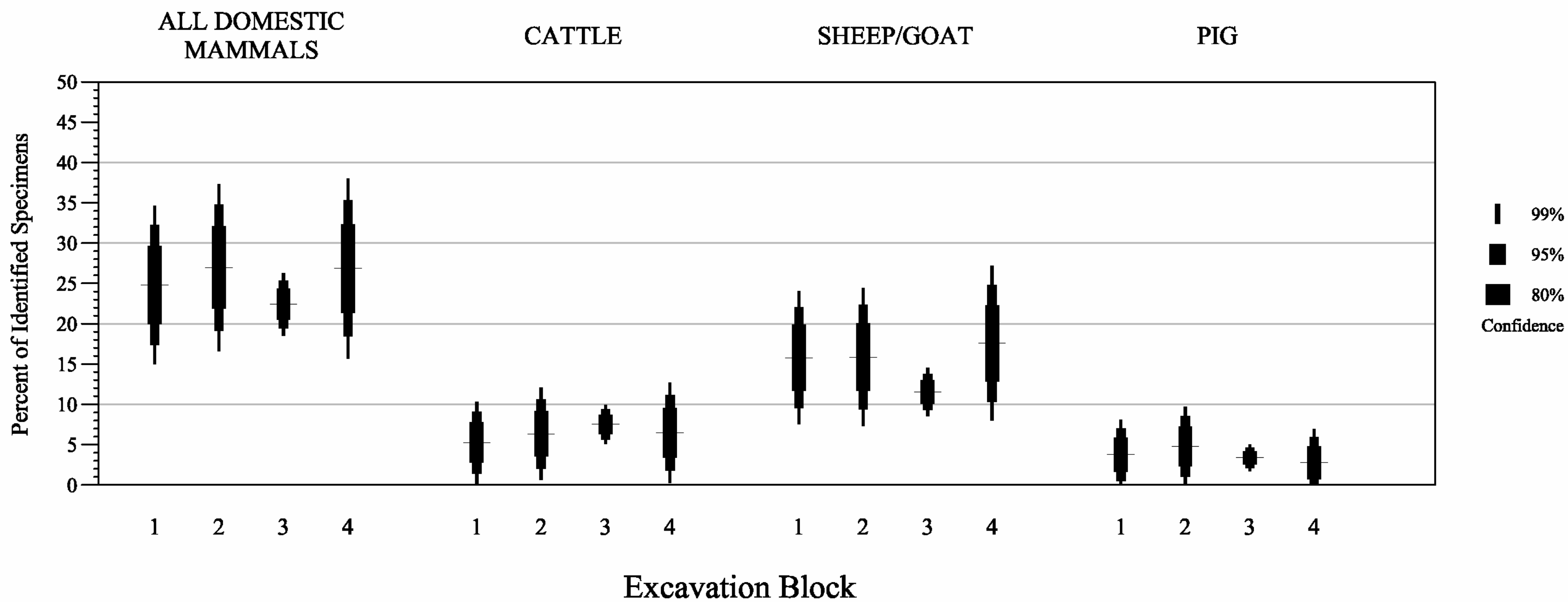

Figure 6.34: Comparison of domestic mammal hind limbs as a percentage of identified skeletal elements of each species.

The assemblage of fish remains recovered from all the excavation blocks is dominated by high percentages of catfish (Figure 6.35) An interesting exception to this pattern is that found in Excavation Block 2 which has a much lower proportion of catfish (only 60.83%) relative to categories of fish than do Blocks 1, 3, and 4 (Table 6.10). In fact, catfish remains from Block 2 make up 26.4% less of the assemblage than in Block 3 where these species account for slightly more than 87% of the total. Conversely, Block 2 has much higher percentages of carp species (specifically *Barbus sp*.) and perch/tilapia than do the other blocks. This is not surprising given that just over 80% of all cyprinid remains were recovered from Block 2 as were 71.48% of all *Tilapia sp*. and 28.61% of perch. What is interesting however, is that, as we will see below (Section 6.2.3.2), while the majority of Tilapia were recovered from Block 2, 64% of the largest specimens (> 20-30 cm Standard Length [SL]) were recovered from Block 3 contexts. Both *Barbus s*p. and *Tilapia sp*. are fish that are known to spend extended periods of time in the floodplain during the annual flood unlike *Lates niloticus* which prefers the deeper waters of the river channel (Rossel 2006; Van Neer 2004). Therefore, these species may have been more easily obtainable during the annual flood than species requiring forays to the river itself which presently is ca. 11 km to the east.[32] Of further note is the overall high percentage of the cyprinids in the el-Mahâsna assemblage. Von den Driesch (1986:13) states that cyprinids never appeared to have great economic significance and usually occur in restricted numbers in most archaeological assemblages. However, at el-Mahâsna these species account for 8.31% of the total assemblage, making them the second most prevalent category of fish recovered, as well as occurring nearly twice as frequently as perch and three-and-half times as frequently as tilapia, both of which are traditionally considered to be of economic importance in the Nile Valley (Rossel 2006).

[32] Unfortunately, the location of the Nile River channel in the Abydos region during Predynastic times is presently unknown. However, given that the river has been trending in a general west-to-east direction over time in this region, it is not unreasonable to assume that the river was closer to el-Mahâsna prehistorically than today.

Table 6.10: Proportions of fish types in each Excavation Block.

Excavation Block	Carp	Catfish	Perch and Tilapia	Puffer Fish	Total
1	2.78%	92.13%	5.09%	0.00%	100
2	27.19%	60.83%	11.98%	0.00%	100
3	4.98%	87.25%	7.66%	0.11%	100
4	3.95%	90.35%	4.82%	0.88%	100
5	15.38%	69.23%	15.38%	0.00%	100

6.2.3.1 Catfishes

As noted above, catfish species account for 86.3% of the identified fish remains at el-Mahâsna. Within this category three families of catfish are represented; Clariidae, including the genera Heterobranchus and Clarias; Bagridae, including *Bagrus bajad* and *Bagrus sp*.; and finally Mochokidae, represented by the genus *Synodontis*. By far, the remains of *Synodontis* dominate the el-Mahâsna catfish assemblage, as well as the fish assemblage as a whole, accounting for 77.66% of all catfish remains and 62% of all identified fish remains (Table 6.11 and Figure 6.36). Clariids make up the next highest proportion of catfish at 13.53% with Bagrids following at 8.8%.

Synodontis is considered by van Neer (2004) to be a so-called open water species which does not spend extended periods of time in the floodplain areas during the annual flood as do other common species such as the clariids, cyprinids, and Tilapiini. Therefore, this species, like perch, would have been available to the inhabitants of el-Mahâsna from the main river channel. Over 70% of the *Synodontis* remains recovered are from combined Blocks 2 and 3. An examination of the distribution of the Standard Length size categories of *Synodontis* across the site reveals that while this species is represented in all the excavation blocks, and makes up relatively equal proportions of the fish remains in Blocks 1-3, nearly 70% of all specimens larger than 30-40 cm SL were recovered from Block 3, while no specimens of this size were recovered from Blocks 1 and 4 (Figure 6.38).

Clariidae species identified at el-Mahâsna are species which have an accessory breathing organ enabling them to breathe atmospheric oxygen and therefore stay in the muddy floodplain after the floodwaters have receded. During this time, they are easily captured by hand without the use of tools (Darby et al. 1977). Species from two genera of Clariidae have been identified at el-Mahâsna, *Clarias gariepinus* and *Heterobranchus sp*. This latter species is among the earliest fish depicted in Egypt, and is most know from its prominent depiction on the Narmer palette where it is used in the writing of Narmer's name (Brewer and Friedman 1989:63).

Clariidae account for relatively equal proportions of the fish remains from each excavation block, with Excavation Block 4 having only a slightly higher proportion than in Blocks 1-3 (Figure 6.37). The remains of this family of species are relatively equally distributed among Blocks 2, 3, and 4 with approximately 24 – 33% of the remains coming from each of these blocks. Block 1 on the other hand produced less than 10% of the overall number of Clariidae specimens at the site. When one examines the distribution of this species with respect to size of individual fish represented, Block 3 has a significantly higher proportion of all those specimens with a standard length greater than 80 cm. In fact, 37.27% of all of the very large Clariidae recovered originated in deposits associated with Block 3 (Figure 6.39). However, unlike with *Synodontis*, these large specimens have been recovered from all the excavation blocks were fish remains have been identified.

The final family of catfish represented at el-Mahâsna is Bagridae which comprises 8.8% of the catfish assemblage and approximately 10% of the total number of identified fish remains. These fish can reach sizes over one meter in length and weigh up to approximately 100 kg and are known for having very good tasting meat (Rossel 2006). These species are considered to be open water species, but are known to spawn in the shallower waters of the Nile floodplain during the inundation (Worthington and Ricardo 1936). Given their behavioral patterns, these fish are more likely to have been caught near the shore of the river or during the inundation (Rossel 2006). Excavation Blocks 1, 2, and 3 have relatively equal, small proportions of their fish assemblages comprised of Bagridae species (<10%), while in Excavation Block 4, Bagridae make up 19.42% of the identified catfish remains (Figure 6.37). When the site is examined as a whole, slightly more than 35% of the Bagridae remains are found to originate in Block 4, while the next highest contributors are Block 2 with 26.57% and Block 3 with 21.0% of the site assemblage of Bagridae, and Block 1 has a mere 7.1% of the remains. It is not surprising therefore to find that nearly thirty-nine percent (38.96%) of the very large specimens (>80-90 cm SL) of Bagridae were recovered from Block 4 (Figure 6.40).

Table 6.11: Taxonomic breakdown of fish remains recovered from el-Mahâsna.

Taxon	Total Quantity	Block 1		Block 2		Block 3		Block 4		Block 5	
		NISP	% of ID	NISP	% of ID	NISP	% of ID	NISP	%of ID	NISP	% of ID
Auchenoglanis occidentalis	1	1	0.44	-	-	-	-	-	-	-	-
Bagridae	8	1	0.44	-	-	6	0.30	1	0.41	-	-
Bagridae/*Lates niloticus*	2	-	-	-	-	2	0.10	-	-	-	-
Bagrus bajad	6	-	-	-	-	6	0.30	-	-	-	-
Bagrus sp.	192	14	6.11	24	5.14	110	5.54	40	16.46	4	28.57
Bagrus sp./Clariidae	1	-	-	-	-	1	0.05	-	-	-	-
Barbus bynni	14	-	-	-	-	14	0.70	-	-	-	-
Barbus sp.	86	2	0.87	36	7.71	45	2.26	2	0.82	1	7.14
Clarias gariepinus	8	1	0.44	-	-	7	0.35	-	-	-	-
Clariidae	320	23	10.04	25	5.35	234	11.78	36	14.81	2	14.29
Cyprinidae	131	4	1.75	82	17.56	37	1.86	7	2.88	1	7.14
Heterobranchus sp.	3	1	0.44	-	-	2	0.10	-	-	-	-
Lates niloticus	138	8	3.49	11	2.36	112	5.64	6	2.47	1	7.14
Perciformes	22	1	0.44	14	3.00	6	0.30	-	-	1	7.14
Siluriformes	88	5	2.18	31	6.64	37	1.86	14	5.76	1	7.14
Synodontis schall	396	32	13.97	16	3.43	333	16.76	15	6.17	-	-
Synodontis serratus	2	-	-	-	-	-	-	2	0.82	-	-
Synodontis sp.	1451	132	57.64	201	43.04	1002	50.43	113	46.50	3	21.43
Tetraodon lineatus	4	-	-	-	-	2	0.10	2	0.82	-	-
Tilapia sp.	67	4	1.75	27	5.78	31	1.56	5	2.06	-	-
Total Indentified	2940	229	100.00	467	100.00	1987	100.00	243	100.00	14	100.00
Total UID	938	41		201		640		48		8	
Total Fish Remains	3878	270		668		2627		291		22	
Total Fish/cu meter	14.53	5.56		32.13		16.26		11.11		2.24	

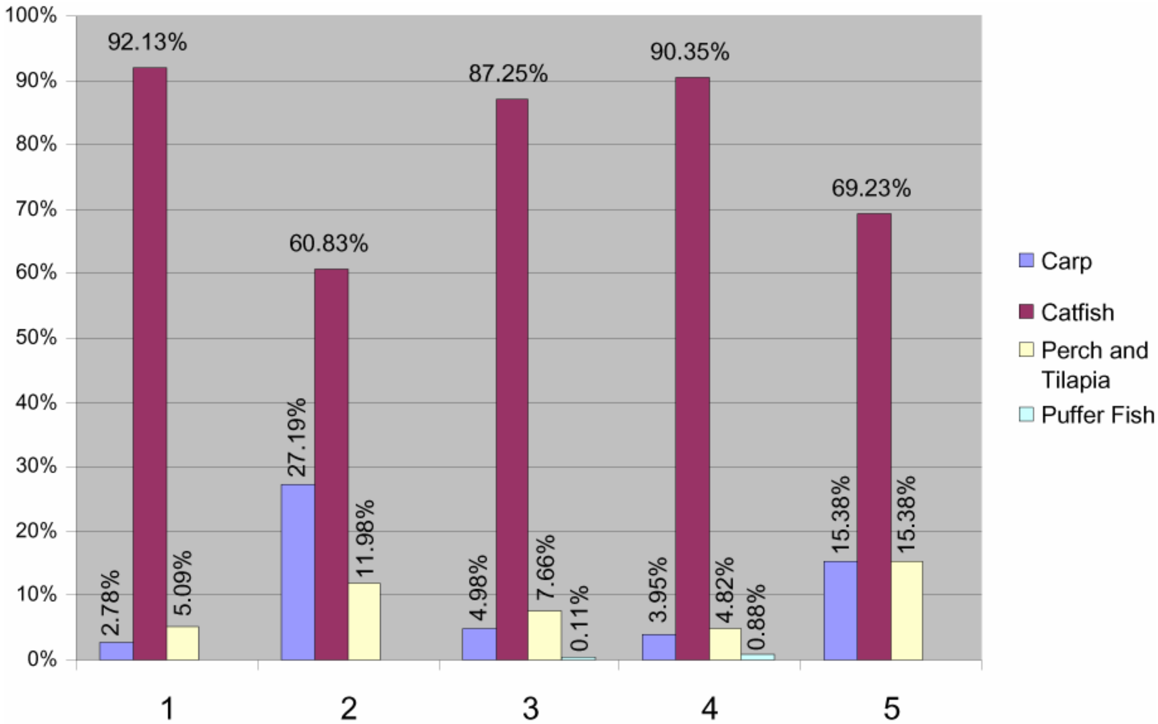

Figure 6.35: Relative abundances various of fish taxa within individual excavation blocks.

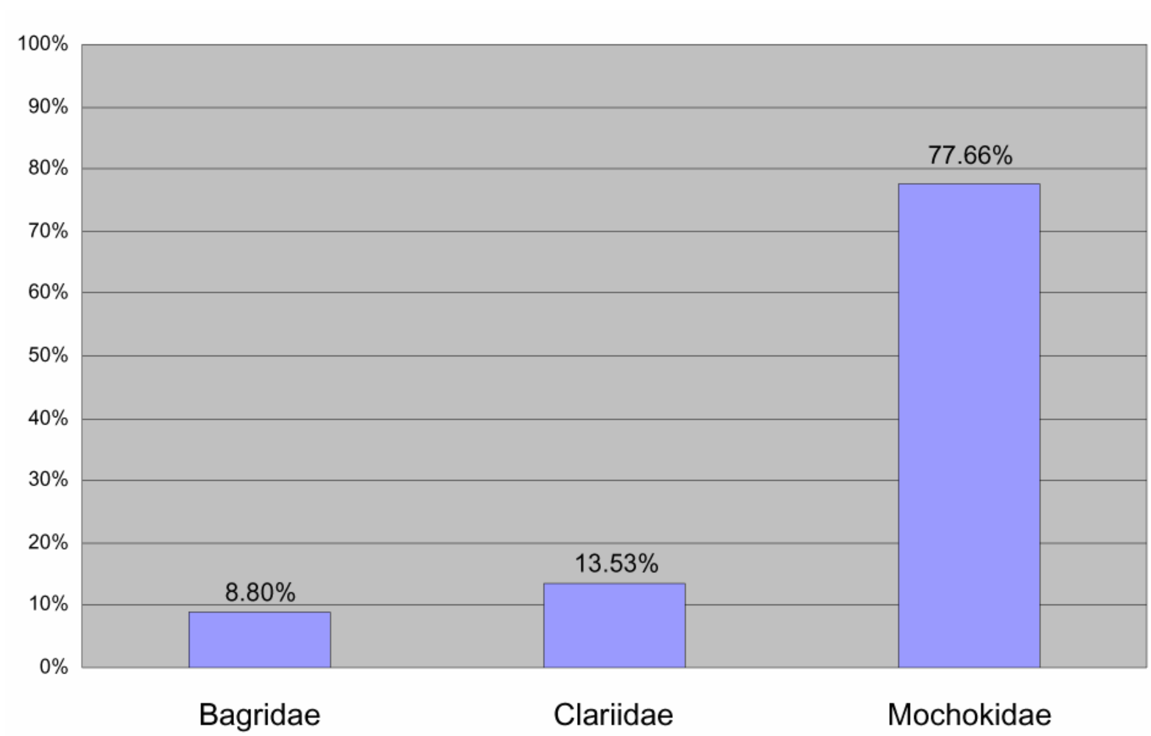

Figure 6.36: Relative abundance of the three families of catfish recovered from el-Mahâsna.

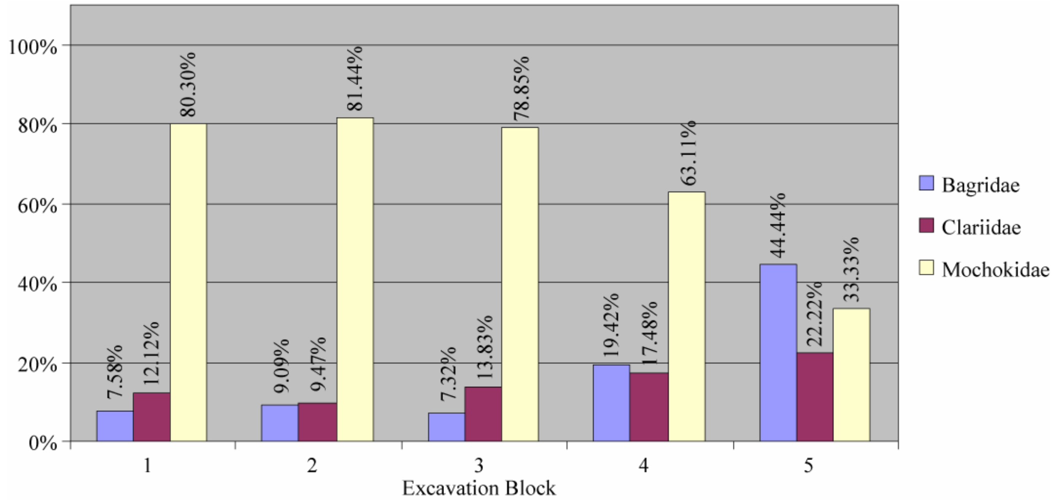

Figure 6.37: Relative abundance (as percentages) of different catfish families by excavation block.

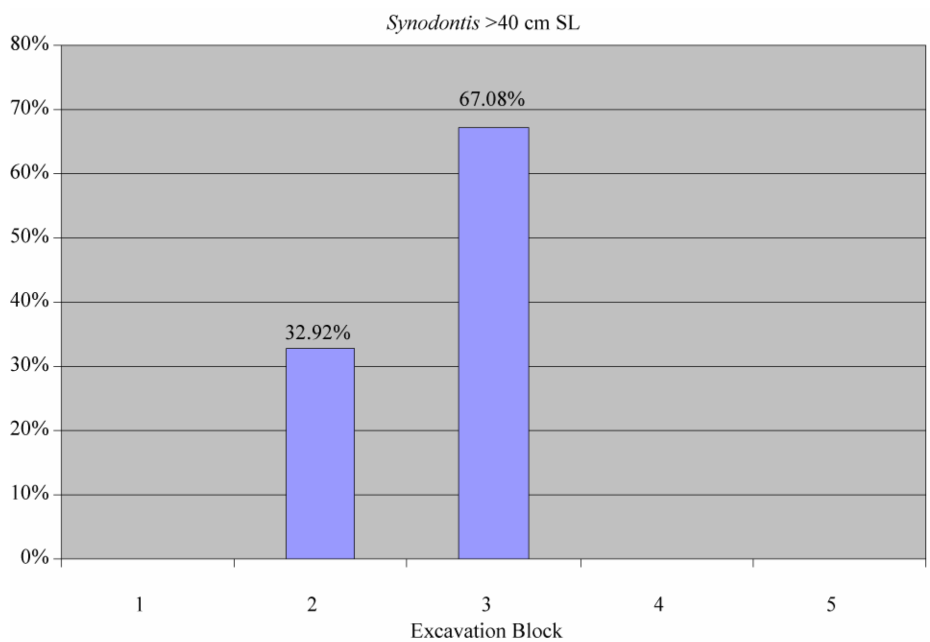

Figure 6.38: Distribution by excavation block of large *Synodontis* as a percentage of the total specimens of this size recovered.

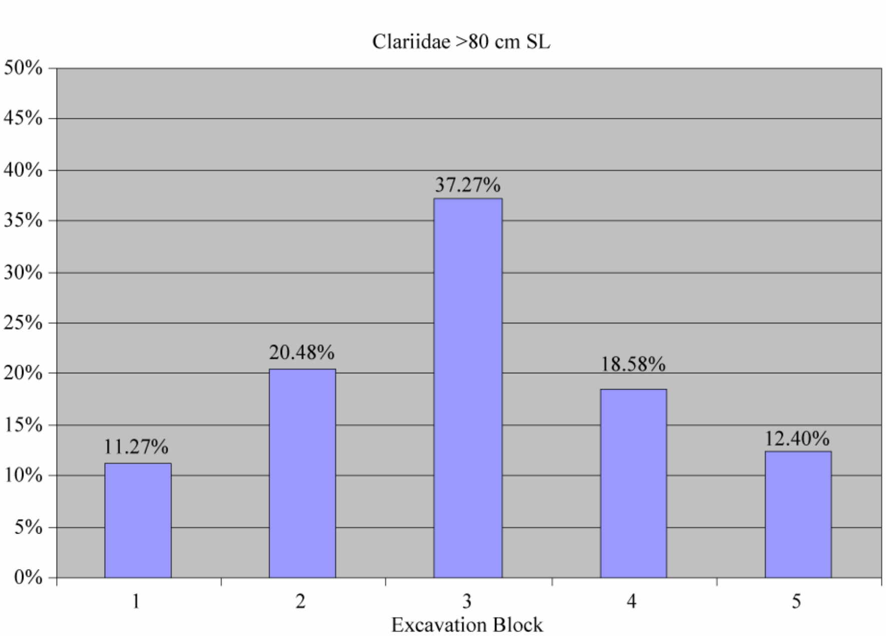

Figure 6.39: Distribution by excavation block of large Clariidae remains as a percentage of the total specimens of this size recovered.

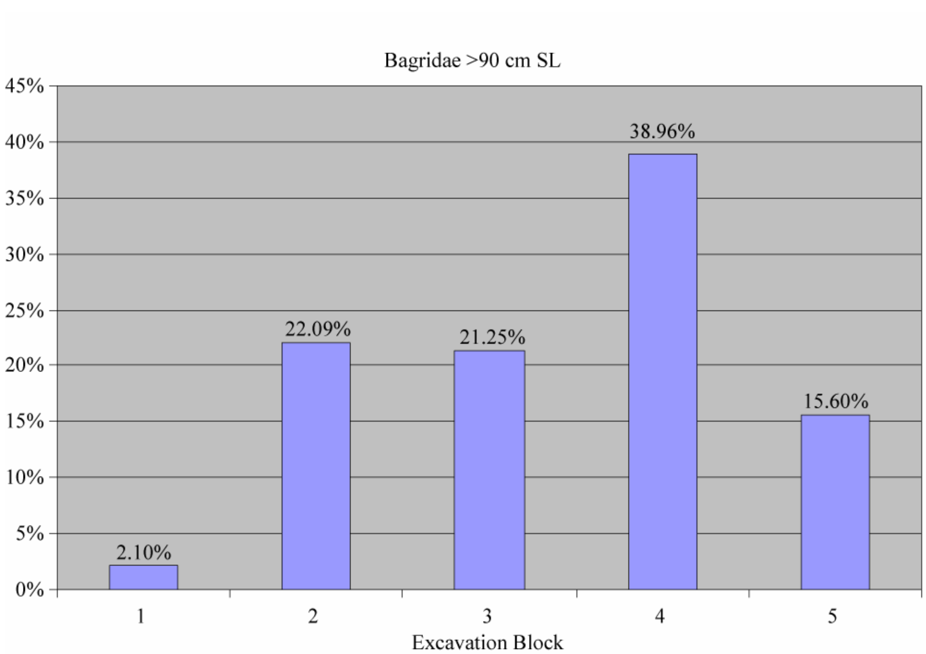

Figure 6.40: Distribution of large Bagridae catfish.

6.2.3.2 Perch, Tilapia, and Puffer Fish

Perch, Tilapia and Puffer Fish species account for only 8.1% of the overall number of identified fish remains at el-Mahâsna, with Puffer Fish (*Tetraodon lineatus*) being the least represented species at only 0.15% (Table 6.9). Nile Perch (*Lates niloticus*) and Tilapia are found in all five excavation blocks in combined quantities that never exceed 15.5% of any block's fish assemblage. Of the four blocks from which sufficient quantities of fish remains have been recovered (Blocks 1-4) this proportion does not exceed 12% of the assemblage. Blocks 2 and 3 have the largest relative proportions of these species (Figure 6.35). Of all the perch remains recovered from el-Mahâsna, 46.82% were recovered from Block 3 deposits, while 71.48% of all Tilapia was recovered from Excavation Block 2. The distribution of large individuals of each of the species was examined to see if there was any pattern to the distribution of large versus small fish (Figure 6.41 and Figure 6.42). As these figures show, 65.55% of the very large (≥100 cm) perch were recovered from Block 3 as were 64% of the largest (≥30cm) tilapia. In the case of perch, this is not too surprising since the majority of perch remains were recovered from Block 3. However, such a large proportion of the very large individuals being found in one area is significant since individuals of this size account for only 13.8% of the total specimens recovered from the site. The distribution of large tilapia specimens is also very interesting in that, contrary to expectations and the distribution of all tilapia remains, the highest proportion of large individuals again was recovered from Block 3 (64%) rather than Block 2 as would have been expected.

Perch are known to inhabit the main river channel, preferring the deep, oxygen rich water (Brewer and Friedman 1989:74). Perch the size of the larger specimens recovered at el-Mahâsna could only have been acquired from the deep channel and would have required group cooperation to be caught and successfully landed (Rossel personal communication 2006). Further, individuals of the size of specimens recovered would have weighed in excess of 90 kg (Brewer and Friedman 1989:74) and may have presented a transportation challenge given the potentially large distance to the main river. Finally, the abundance of various skeletal elements present at el-Mahâsna suggests that these large fish were transported whole, rather than having been processed elsewhere and transported piecemeal (Rossel 2003, 2006).

A similar pattern of restricted distribution of large specimens of perch is noted for the cult building in Locality HK29A at Hierakonpolis (Friedman 1996: 24; Linseele and Van Neer

2003:7). Here, larger specimens dominate the assemblage with lengths of up to of 1.5 m (Linseele and van Neer 2003:7). Rossel (personal communication 2006) has also identified a restricted distribution of perch, in general, and larger perch in particular at the Middle Kingdom mortuary temple complex of Senwosret III at South Abydos. In the latter case, remains of large perch were restricted to contexts directly associated with the dwellings of high level priests (Rossel personal communication 2006). While post-dating el-Mahâsna and Hierakonpolis by more than 1,500 years this site demonstrates that preferential access to selected portions of the catch is quite obviously reserved for higher status members of the society as well as cultic/religious contexts; the two of which need not be separate.

The final fish species documented at el-Mahâsna is the puffer fish or *Tetraodon lineatus*. This fish species, like others of its family, contains the poison tetrodotoxin, a highly poisonous toxin report to be between 1,200 – 10,000 times stronger than cyanide. Despite the presence of this poison, the meat of this fish is edible once internal organs and skin have been removed (Rossel 2006). This fish is only represented at el-Mahâsna by the occurrence of four specimens, two recovered from each of Block 3 and Block 4.

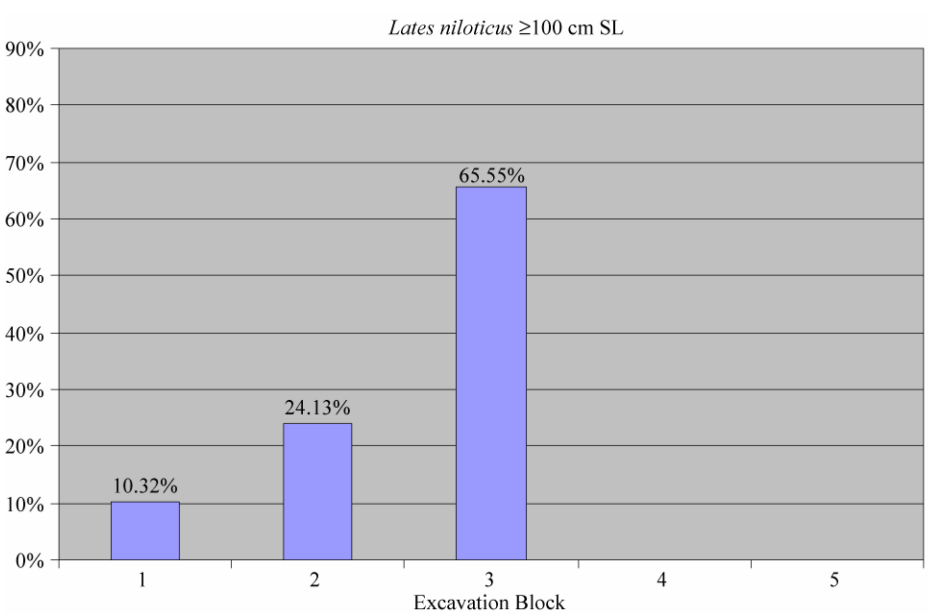

Figure 6.41: Distribution of large perch

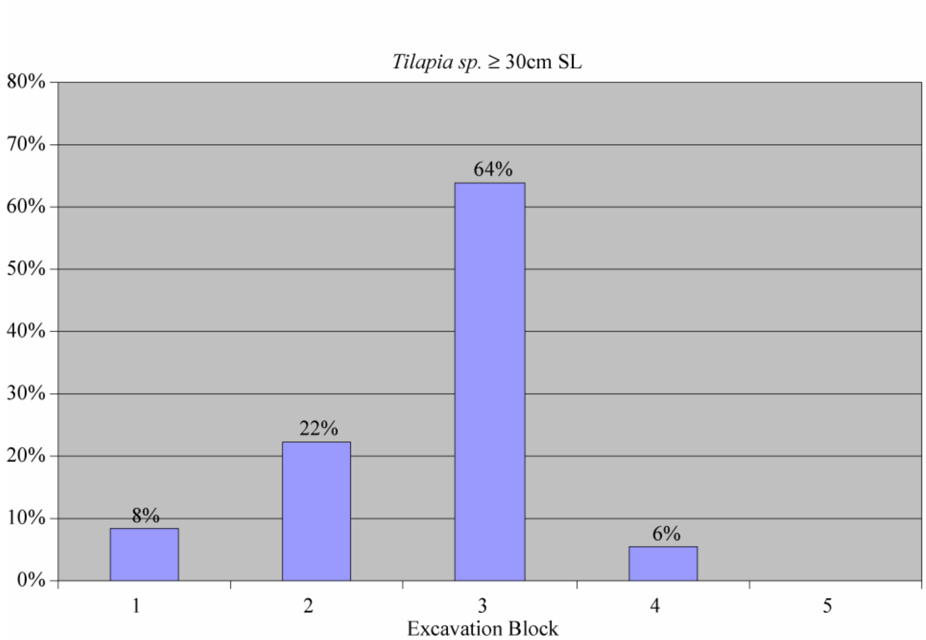

Figure 6.42: Distribution of large tilapia.

6.2.4 Reptile Assemblage

A total of 301 reptile remains were recovered from the Predynastic period deposits at el-Mahâsna. Of these, 94.35% (*n* = 284) can be attributed to the soft-shell turtle (*Trionyx triunguis*), while only <1% can be attributed to Nile crocodile (*Crocodylus niloticus*). The remaining 4.65% were unidentified as to species level, but are likely additional specimens of turtle. Turtle remains are well known from Predynastic contexts and were used as a food source into the earlier portions of the Old Kingdom, although by the end of this period they were considered to have negative connotations and ceased to be eaten (Fischer 1966:194). Along with crocodile, turtles are dangerous aquatic animals that can reach diameters of up to four feet and have been known to inflict serious wounds on fishermen when not handled carefully. Further, as with the crocodile, these creatures become regarded as one of the forces of chaos or evil and by Middle Kingdom times, turtles are regarded as one of the enemies of the sun god Raʿ (Fischer 1966:195).

The distribution of reptile remains at el-Mahâsna is very restricted, with 57.39% of all turtle remains recovered in Block 4 (Figure 6.43). Crocodile remains were only recovered from Blocks 1 and 3, with two-thirds coming from Block 3. However, when adjusted for volume of excavated deposits, these two blocks have nearly equal representation. A similar pattern of restricted distribution for these species was noted by Friedman for the Naqada IIc-III/Dynasty 0 cultic structure at Hierakonpolis Locality 29A (1996:24).

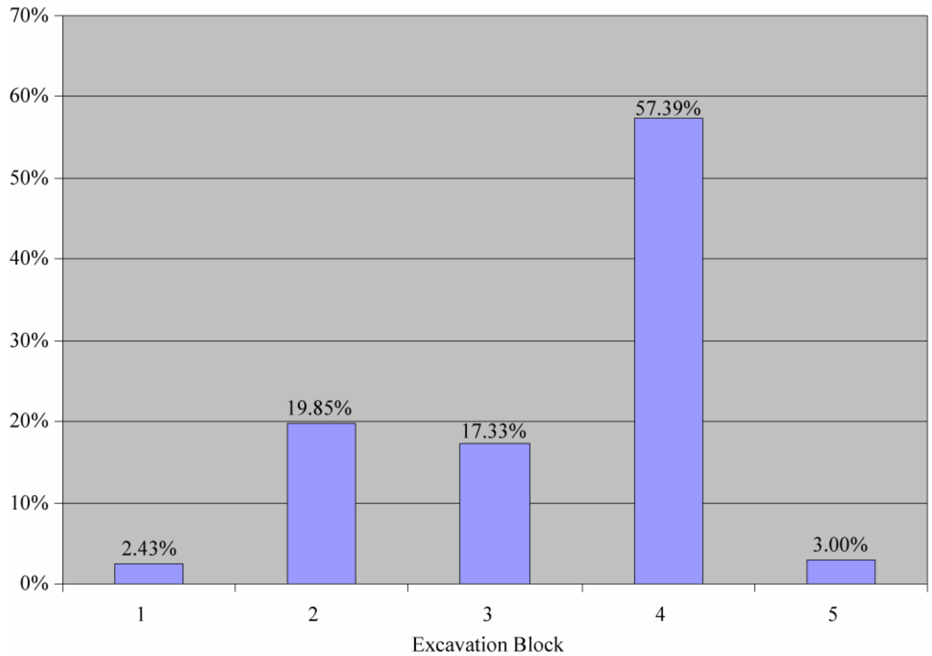

Figure 6.43: Distribution of turtle remains as a percentage of the entire site assemblage.

Table 6.12: Bone and ivory items recovered at el-Mahâsna.

Object Type	MAP Number	OP	Locus	Taxon	Skeletal Element	Habitation Phase
Bone Items						
Awl	1773	18	49	Clariidae, *Synodontis* sp., or *Lates niloticus*	pectoral spine or dorsal spine	3B
Awl	1793	16	49	sheep/goat	distal metapodial	3B
Awl	3045	23	49	large mammal	long bone	3D
Awl	3045	23	49	sheep/goat	distal metacarpal	3D
Awl	3045	23	49	sheep/goat	distal metapodial	3D
Awl	3047	16	95	sheep/goat	distal metatarsal	3D
Awl	3181	9	44	unknown	spine	1B
Awl	3181	9	44	*Lates niloticus*	dorsal spine	1B
Awl	3182	11	66	unknown	spine	2B
Awl	3183	14	47	sheep/goat	distal metapodial	4B
Awl	3184	14	47	pig/sheep/goat	distal metapodial	4B
Awl	3186	36	49	sheep/goat	distal metapodial	3C
Awl	3187	23	49	sheep/goat	distal metapodial	3D
Awl	3188	17	49	sheep/goat	distal metatarsal	3D
Awl	3189	21	49	sheep/goat	distal tibia	3C
Awl	3258	23	49	sheep/goat	distal metatarsal	3D
Awl	3261	37	49	unknown	unknown	3D
Awl	3261	37	49	*Lates niloticus*	dorsal spine	3D
Awl	3262	39	49	sheep/goat	distal metapodial	3D
Awl	3263	16	95	pig/sheep/goat	distal metapodial	3D
Awl	3264	35	49	*Lates niloticus*	dorsal spine	3D
Awl	3264	35	49	*Lates niloticus*	dorsal spine	3D
Awl	3265	41	49	sheep/goat	distal tibia	3D
Awl	3267	18	49	pig/sheep/goat	distal metapodial	3C
Awl	3267	18	49	*Lates niloticus*	pterygiophore	3C
Awl	3267	18	49	Perciforms (*Lates niloticus* or *Tilapia* sp.	dorsal spine	3C
Awl	2996	23	49	unknown	long bone	3D
Awl	3155	13	38	unknown	long bone	2B
Needle	973	16	2	UID	long bone	3GAR
Needle	3043	19	49	unknown	long bone	3D
Needle	3185	21	49	sheep/goat	distal metapodial	3D
Ivory Items						
Amulet	1028	4	2	Elephant or Hippo	Tusk	1A
Bracelet	952	17	2	Elephant or Hippo	Tusk	3GAR
Projectile Point	3001	16	49	Elephant or Hippo	Tusk	3D

6.3 BONE, IVORY, AND OSTRICH EGGSHELL OBJECTS

A total of 34 items manufactured from bone and ivory were recovered during the 2000 field season at el-Mahâsna. These items include awls, needles, a projectile point, and a portion of an amulet or "tag." A complete list of these items can be found in Table 6.12.

6.3.1 Bone Tools

Of the recovered bone/ivory items, 82.4% (*n* = 28) are awls and fragments of awls. In 67.9% of the awls (*n* = 19), bones of mammals, primarily sheep/goat, were used for their manufacture, with the remaining 32.1% manufactured from fish remains (*n* = 9). Of the mammal bone awls, 63.2 % are from sheep/goat (*n* = 12), 15.8% are from medium sized artiodactyls ([sheep/goat/pig size] *n* = 3), 5.3% are from large mammals (*n* = 1), and 15.8 % are unidentifiable fragments of mammal long bones (*n* = 3). With respect to skeletal element used in the manufacture process, preference appears to have been given to the lower limbs of artiodactyls, specifically the distal ends of metacarpals (5.3%, *n* = 1), metapodials (47.4%, *n* = 9) and metatarsals (15.8%, *n* = 3). Also used was the distal end of the tibia (10.5%, *n* = 2). The remaining specimens could not be directly attributed to a specific skeletal element but appear to have been manufactured using long bones of mammals.

Additional specimens (*n* = 9) of awls were manufactured using the spines from dorsal and pectoral fins of Nile fish, primarily perch (*Lates niloticus*), but also possibly members of the Clariidae and Mochokidae families. These items can be very difficult to distinguish from unmodified examples of these spines as the distal ends of these elements can appear quite polished naturally. However, in the case of these examples, wear marks running perpendicular to the "shaft" axis could be observed with the aid of a 10x hand lens and appear to be indicative of these items being used in a rotary or twisting motion to pierce materials.

A total of three fragments of bone needles were also recovered during the 2000 season. Due to the nature of these artifacts, it is not possible to definitively determine the skeletal element used in their manufacture aside from a general designation of "mammal long bone fragment." However, in one particular case (MAP 3185), it is likely that it is from a sheep/goat metapodial.

The bone tools recovered from el-Mahâsna are very similar to those reported from Adaïma with respect to type and form. However unlike el-Mahâsna, bone tools from Adaïma were exclusively made using mammal bones, specifically those of sheep/goat. Twenty-six bone tools have been detailed from Adaïma and consist of 21 awls, 4 needles, and a single harpoon. A greater use was made of tibia for manufacturing tools, with 28.6% (n = 6) of the awls made on this element compared to only 10.5% of the el-Mahâsna examples. Nine examples (42.9%) of awls were manufactured using metapodial bones at Adaïma compared to 68.4% of the el-Mahâsna assemblage (Midant-Reynes and Buchez 2002: 436-437)..

In addition to finished bone tools recovered at el-Mahâsna, 14 pieces of bone debris from the tool manufacturing process were also noted during analysis of the faunal assemblage. These debris were identified as originating from sheep/goat (64.3%), cattle (14.3%), and gazelle (21.4%) (Table 6.13). In 85.7% of the cases, these manufacturing debris originate from the lower portion of the leg (meta-podials, -carpals, and –tarsals), while 7.1 % each originate from the upper leg and rib bones. The similar distribution, relative to skeletal element, of the manufacturing debris versus the completed tools suggests that the bone tools recovered from el-Mahâsna were manufactured locally and not an item acquired from external sources.

An examination of the distribution of the bone tools across the site reveals a pattern of heavier concentration in Block 3 relative to the other excavated areas. Slightly over 50% (n = 25) of the bone tools recovered at el-Mahâsna originate from Block 3. Block 4 has the next highest concentration with 28.1% (n = 3). Sixty-eight percent of the bone tools recovered from Block 3 are associated with Habitation Phase 3D and one-hundred percent of those recovered in Block 4 are from Phase 4B deposits. This concentrated pattern suggests that activities were being conducted in Block 3 that required the extensive use of awls and needles in comparison to the other areas of the site that have been investigated. These activities possibly include either the production of textiles and textile related items or perhaps production of fishing related paraphernalia such as cords, sails, and nets. This pattern is discussed further in Section 7.2.1 below.

Table 6.13: Summary of bone tool manufacturing debris by taxon and skeletal element.

Taxon	Quantity
Bovidae	2
Ovis sp./ *Capra* sp.	9
Gazelle sp.	3
Total	14

Skeletal Element	Quantity
metacarpal	3
metapodial	3
metatarsal	6
rib	1
tibia	1
Total	14

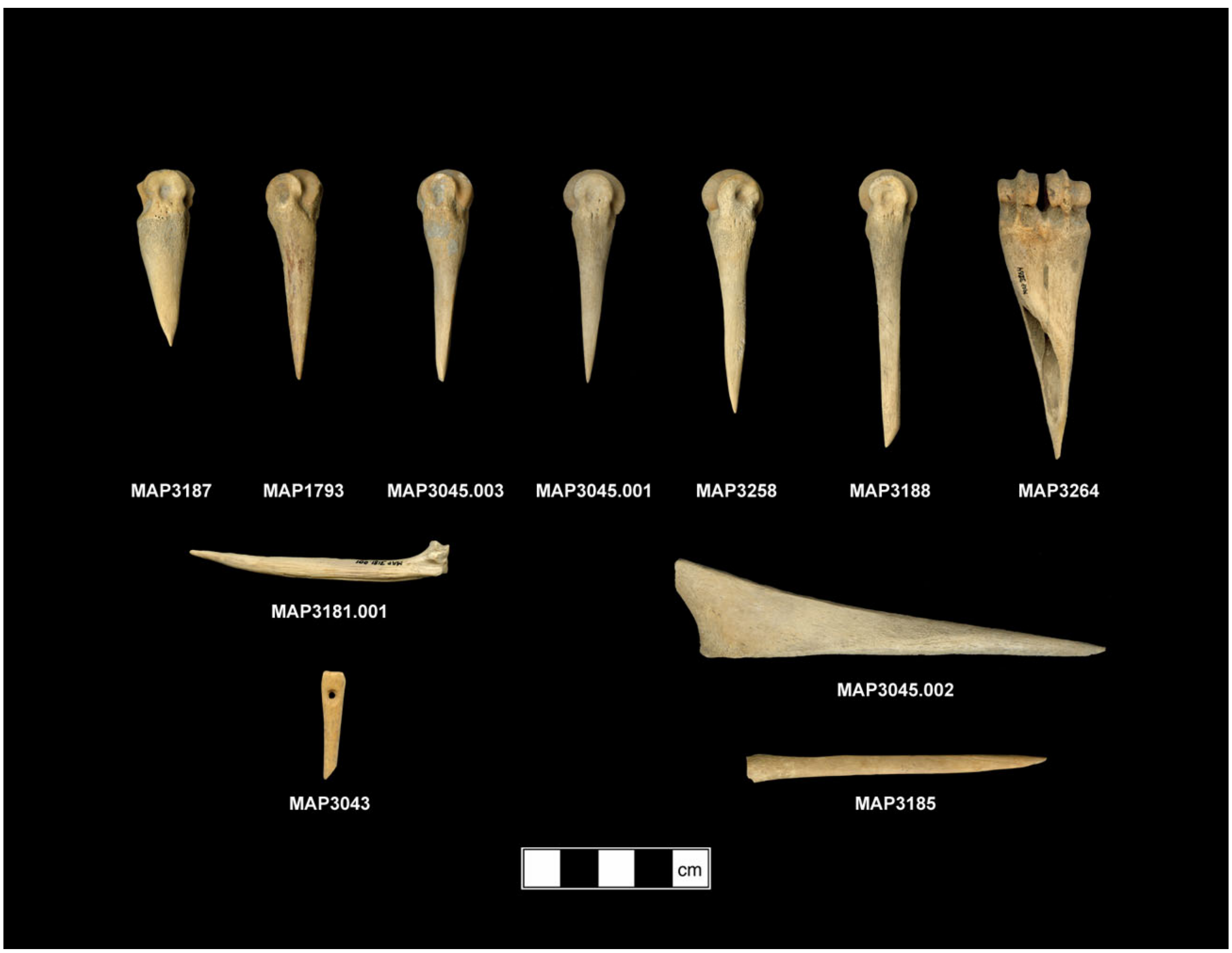

Figure 6.44: Representative examples of bone tools recovered from el-Mahâsna.

6.3.2 Ivory Objects

Only three ivory items are known to have been recovered from the settlement area at el-Mahâsna (Figure 6.45).[33] These include a fragment of an ivory bracelet (MAP952), an ivory projectile point tip and partial shaft (MAP 3001), and a fragment of an ivory amulet, tag, or figurine (MAP 1028). While the identification of these items as ivory is fairly secure, it is not known if the ivory is elephant, which presumably would indicate a southern or Nubian/Sudanese origin, or hippopotamus, which would have been locally available in the Nile Valley of Egypt. The ivory bracelet fragment is approximately 40% preserved and had an inside diameter of 4.9 cm and an outside diameter of 5.7 cm; dimensions in keeping with at least some of the examples recovered from the el-Mahâsna cemetery area (Aryton and Loat: pls XI, XII, and XVI, XVIII, and XXI).

The ivory project point and partial shaft (MAP3001) measures 4.52 cm in maximum length, 1.0 cm in maximum width, and 0.74 cm in thickness (Figure 6.45). The anterior or point end has been burned at some point in time, while the posterior end has been broken. The pattern of the break is more suggestive of having been "snapped" rather than the result of an impact fracture.

Finally, the last ivory item recovered is most likely a portion of what have commonly been refered to as amulets or ivory tags. This item consists of a piece of ivory, plano-convex in cross section measuring 0.59 cm in thickness, 1.57 cm wide, and with a maximum preserved length of 2.33 cm. The object has been broken along the lower of two carved groves that are present and has been darkened through exposure to fire. Given the small portion preserved, it is unclear whether this specimen represents a carved tag in the more stylized geometric mode such as those depicted by Petrie (1920: pls XXXII-XXXIII; see also Spencer 1993:32) or the lower end of a so-called "bearded man" figure (Petrie 1920 pl II, nos. 1-5; Nowak 2005:896-899). However, in both size, style and workmanship, it is similar to one from Tomb H 85 at el-Mahâsna (Aryton and Loat 1911: pl XIX).

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[33] While two ivory items, a bead and bracelet, are depicted by Garstang (1903: pl. IV) these appear to be from his work in cemetery at el-Alawna rather than from the settlement at el-Mahâsna. Aryton and Loat recovered a number of ivory items from Predynastic graves at el-Mahâsna including bracelets, combs, figurines (both anthropo- and zoomorphic), tags, pins, beads, etc. (Aryton and Loat 1911).

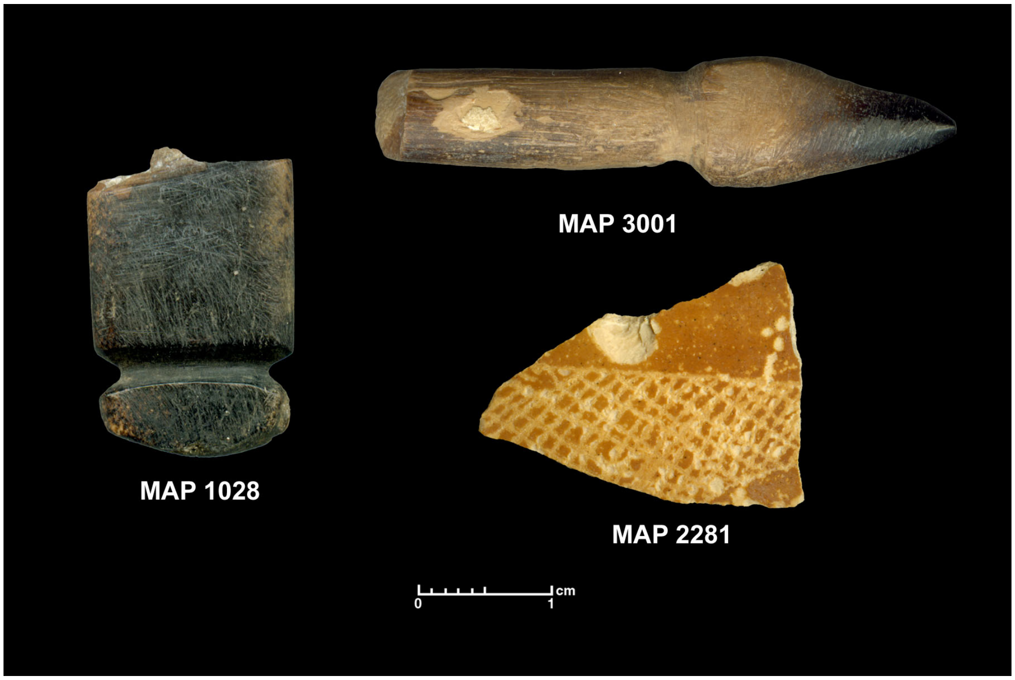

Figure 6.45: Ivory (MAP 1028 and 3001) and Ostrich eggshell (MAP 2281) objects.

6.3.3 Items of Ostrich Eggshell

Over the course of the 1995 and 2000 excavations at the el-Mahâsna settlement a total of six items manufactured from or fragments of ostrich eggshell were recovered (Table 6.14). These include two beads, three undecorated fragments of eggshell, and a single fragment of decorated shell. This last item, MAP 2281, is a fragment of eggshell approximately 2.41 x 1.84 cm in size. The outer surface of the shell has a brownish orange patina/coloration through which a design has been incised using a series of cross-hatched lines contained within two lines forming the boundary of the design element (Figure 6.45). Decorated ostrich eggs are known from Predynastic cemetery and settlement contexts (Brunton and Caton-Thompson 1928:28; Kantor 1948:46; Petrie and Quibell 1896; Midant-Reynes 2000) and the eggs themselves would presumably been available locally (Hendrickx 2000:24, Houlihan 1986:1) Both decorated and undecorated fragments are reported for the settlement at Adaïma where 86 fragments were recovered including five specimens decorated with incised lines (Midant-Reynes and Buchez 2002:438). Additionally, a single ostrich eggshell bead was recovered from the cemetery at Adaïma, however, unlike those recovered from el-Mahâsna, this bead was square in shape (Midant-Reynes and Buchez 2002: 429, 438, and pl 4.1).

Table 6.14: Items of Ostrich eggshell.

MAP Number	OP	Locus	Object	Habitation Phase
190	2	1	Bead	8A
1212	10	2	Bead	3GAR
1935	12	66	Fragment of ostrich eggshell	2A
2085	12	66	Fragment of ostrich eggshell	2C
2281	14	47	Engraved fragment of ostrich eggshell	4B
2770	7	44	Fragment of ostrich eggshell	1B

6.4 FIGURINES

One of the more unusual categories of artifacts recovered from the settlement at el-Mahâsna is an assemblage of 86 anthropomorphic and zoomorphic clay figurines and figurine fragments. While well known from purchased collections and cemetery excavations (Ucko 1965, 1968), these items are rare from settlement contexts, and when found are usually in very limited numbers. Recovered nearly entirely from Excavation Block 3, these figurines represent portions of five, and possibly seven, anthropomorphic, and 25 zoomorphic figurines. In addition, to these recognizable figurine forms, a total of 54 additional figurine fragments were also recovered. This section will first discuss the assemblage of anthropomorphic and zoomorphic figurines, followed by a discussion of the figurine fragments.

6.4.1 Anthropomorphic Figurines

Five figurines that can reliably be assigned to the category of anthropomorphic were recovered from el-Mahâsna during the 2000 season. Additionally, two other fragments that are believed to also be from anthropomorphic figures were also found. In six of the seven cases, these figurines were recovered from Habitation Phase 3D contexts, while the remaining figurine was found in Habitation Phase 3B deposits. These figurines are summarized in Table 6.15 and shown in Figure 6.46 - Figure 6.49.

The anthropomorphic figurines from Block 3 represent individuals in at least two postures. Mah.IV.1 is a seated female which based on the angle of the surviving portion of the waist appears to have been sitting with a straight, upright posture (Figure 6.46). Mah.IV.2 is a seated female who is reclining at a very steep angle, bent backwards at the waist, rather than the hips (Figure 6.47). Fragmentary figurines Mah.IV.4 and Mah.IV.6 also appear to represent similarly seated and postured females as Mah.IV.2 (Figure 6.48). Finally, it is not possible to assign postures to figure fragments Mah.IV.3 and Mah.IV.5 (Figure 6.49).

Detailed descriptions and the particulars of the anthropomorphic figurines are described in Appendix D as well as elsewhere (Anderson 2002b). In the following discussion, I have chosen to focus here on more general issues regarding the techniques employed in their manufacture and evidence for their potential use within the Predynastic settlement.[34]

In all but one case (Mah.IV.3), the anthropomorphic figures recovered from the structure in Block 3 were manufactured using untempered, Nile silt fabric. The clay utilized appears to have been carefully prepared to remove all but the smallest natural inclusions. The figurines were formed in multiple parts which were then subsequently joined to form the finished figure. Based on evidence from figurine Mah.IV.2, it appears that the figures were manufactured in at least four (and possibly five) individual parts. These include the right and left legs individually, the torso, and breasts. The head may also have been formed separately, however, no heads have been recovered to date, and breaks on the upper necks of Mah.IV.2 and Mah.IV.5 do not appear to be along join lines. In four cases (Mah.IV.1, Mah.IV.2, Mah.IV.4, and Mah.IV.6), this method of manufacture resulted in weak points along which the figurines subsequently split. Evidence from the individual fragments reveals that prior to joining, the join surfaces were not scored to increase the likelihood of their fusion with the adjoining part.

Following construction, the figurines were allowed to dry slowly as seen in the absence of drying cracks/fissures which would have resulted had they been subjected to rapid drying. From evidence of tool marks evident on Mah.IV.2, it appears as though final shaping/finishing of the figurines was conducted while they were in a leather-hard stage with a sharp, flat implement. In contrast, however, the tattoo decorations and pubic triangle indications on Mah.IV.1 appear to have been incised using a sharp pointed tool while the clay was rather wet. In the case of the

[34] This discussion has been taken and modified from Anderson, 2002b.

pubic triangle incisions of Mah.IV.1, these may have been further accented by the addition of white pigment or lighter color clay to the incisions (Figure 6.46). In all cases, except Mah.IV.3, the figures were left unfired or only minimally fired.

Figure fragment Mah.IV.3 represents a departure from the other figures recovered being constructed of sand tempered Nile silt fabric, as well as having been fired. Further, following firing, the figure was covered in a red pigment, over which a field of white pigment was added to one face. Upon this white background, an indeterminate decoration was painted in black lines. In addition to the painted decoration, Mah.IV.3 also has two holes at one end which pass through the figure. These may have been intended for the attachment of additional decorative elements.

From the context in which the figurines were recovered, it is apparent that they were utilized within the Block 3 structure. The four fragments which make up Mah.IV.2 were recovered over an area of 8 m^2. This would suggest that the figure was broken during use and the individual pieces scattered across the floor area. Further evidence for the use of this figure comes from the pre-depositional wear and abrasion present on the breasts of the figure. Additionally, the five conjoining fragments of Mah.IV.5 were also recovered across an area of approximately 2 m^2, again suggesting breakage and discard during use of the building. In all cases, these figures do not appear to be manufacturing rejects, but rather figurines that were discarded following use. Further, given the evidence of use, it is clear that these figures were not manufactured specifically for the funerary industry (i.e. as grave goods), but rather to be utilized as part of rituals taking place within the settlement itself.

Figure 6.46: Three views of figurine Mah.IV.1; right side (left), top (center) and three-quarter (right) views.

Figure 6.47: Two views of Figurine Mah.IV.2; right side (left) and front (right) views.

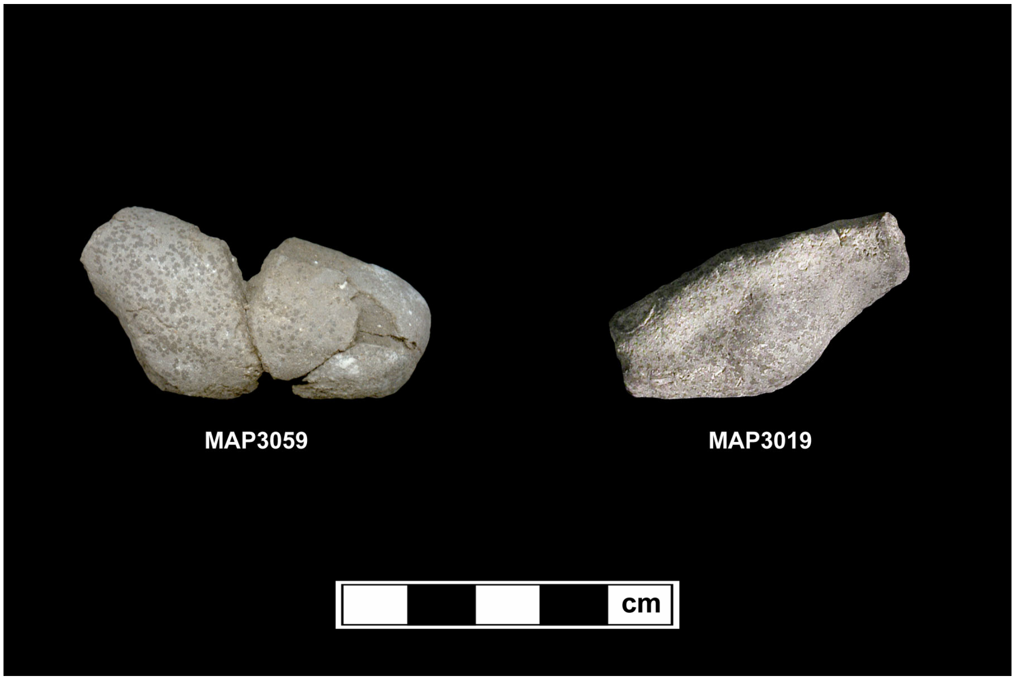

Figure 6.48: Figurines Mah.IV.4 (right) and Mah.IV.6 (left).

Figure 6.49: Front (left) and back (right) views of Figurine Mah.IV.5.

Table 6.15: Summary of anthropomorphic figurines recovered from el-Mahâsna during the 2000 season.

Corpus Number [a]	MAP Number	Operation	Locus	Lot	Habitation Phase	Figurine Subject	Portion Preserved
Mah.IV.1	2558	35	49	1	3B	Seated woman with incised tattoo pattern of zigzag line and incised dots; perhaps representing water and grain.	legs and lower waist only
Mah.IV.2	2920.1	19	49	5	3D	Seated woman	legs, waist, and upper body. Head missing
	2923	19	49	5	3D		
	3046	16	95	1	3D		
Mah.IV.3	2934	20	49	6	3D	Unknown	indeterminate
Mah.IV.4	3019	18	49	7	3D	Seated woman [b]	left leg only
Mah.IV.5	3020	18	49	7	3D	Woman, seated (?)	upper body only; head and lower body missing
Mah.IV.6	3059	16	49	7	3D	Seated woman	right leg only
Mah.IV.7	3332	20	49	5	3D	Seated woman (?)	portion of leg only. Anthropomorphic ascription made based on construction techniques

[a] Corpus numbers given are those to be used in Ucko and Adams, forthcoming.

[b] This figurine has previously been classified as the right leg of a standing female (Anderson 2002b). However, reanalysis in late 2002 suggests that it represents the left leg of a seated female figurine similar to Mah.IV.1, Mah.IV.2, and Mah.IV.6.

6.4.2 Zoomorphic Figurines

A total of 25 zoomorphic figurines have been recovered from the settlement at el-Mahâsna. Of those recovered, 22 originate from secure, Predynastic contexts, while two are from disturbed deposits (MAP 933 and MAP 1205; both Habitation Phase 3GAR). A final animal figurine (MAP 3152) was recovered from unknown stratigraphic contexts from the wall of Operation 11 following cleaning in preparation for drawing the stratigraphic profile; but most likely is also from secure Predynastic context. The assemblage of zoomorphic figurines is summarized in Table 6.16 below and includes all those complete figurines and figurine fragments that can be reliably be determined as being part of an animal figurine. The following discussion includes only those 22 figurines from secure contexts.

With the exception of a single specimen, (MAP 2408) all the animal figurines were recovered from Excavation Block 3 contexts. The only non-Block 3 specimen was recovered from Locus 96 in Block 4. Of those figurines recovered form Block 3, 85.7% (n = 18) were recovered from deposits associated with the floor of the structure, namely Phases 3C, 3D, and 3E. Over 86% (n = 19; 86.4%) of the animal figurines are constructed of untempered, Nile silt clays, with two examples having been tempered with sand, while temper was not recorded for the final specimen. In all twenty-two cases, the figurines do not appear to have been fired, but were left in an unfired state. Based on visible wear and breakage patterns, it appears as though these figurines were intentionally unfired, rather than being in an unfinished state of manufacture, awaiting firing.

In twenty-one of the specimens, the figurines appear to depict bovine or cattle forms, while a single specimen (MAP 969) may represent a ram or sheep; however, it most likely also depicts a bovine form. Like the anthropomorphic figurines just discussed, these cattle figurines are stylized representations of the actual animals, with the depictions focusing on the representation of the heads and horns. A total of nine figurines were complete or nearly complete and allow us to determine the manufacturing process and final form of the figures (Figure 6.50).

Based on evidence from several broken examples, it is possible to reconstruct the process or steps used in manufacturing the cattle figurines. It appears as though the artist began by forming a cylinder of clay around a stick or dowel toward the back of the figure, while leaving the area that was to become the head solid clay. Once the desired length and thickness were reached, the impression of the hump of the shoulders was achieved by slightly bending the front portion downward, while also pinching the clay of the bottom front of the figure to form the muzzle or face of the animal. The horns were then formed either by pinching and forming clay that was part of the main body up and away from the figure, or by adding additional clay and then forming the horn structure; although the former method seems to have been most prevalent. Once the entire figure was formed, it was removed from dowel and the back end was sealed and reformed to hide the dowel cavity.

As can be seen in the examples shown in Figure 6.50 and Figure 6.51 the artists chose to concentrate on the form of the head and horns, while indicating the body purely by an elongated extension of the neck; lacking any further distinction except in the case of MAP 2562.001 discussed below. In some of the examples, the length of the body is proportional to the head (ex. MAP 3149.001 and MAP 3149.002) and while in others (MAP 3013 and MAP 3149.003) the body is much shorter or truncated, giving the figurine and even more stylized appearance. Complete examples have an average, overall body length of 4.46 ± 1.08 cm but show much variation (n = 9, σ =1.4018), ranging in length from as small as 1.87 cm to as long as 6.0 cm.

In at least five examples, the figurine has been further modified to indicate other features, namely the presence of legs (MAP 2562.001); and possible slaughtering cuts or slashes on the neck (MAP numbers 2974, 2989.001, 3002, and 3054; Figure 6.51). In the case of the former, what appear to represent two hind legs are indicated on MAP 2562.001 by the presence of two small protrusions on the belly of the figure at the very hind end (Figure 6.50). These “lumps” appear to have been formed, not by the addition of clay, but by pinching and forming part of the main clay body.

The only other modifications or decorations to the figurines is the occurrence of two incised slashes on the neck of the animal that occur on four of the figurines. In all cases, these slash marks appear only on the right side of the animal’s neck, and not on the left. They appear to indicate cut marks suggestive of cutting the neck during butchering, and were made while the clay was still damp, rather than afterward. These can be seen most clearly in MAP 2974 (Figure 6.51).

Similar figurines have been recovered from Predynastic settlements, such as those found at the Predynastic settlement site MA 21a/83 near Armant (Ginter and Kozłowski 1994:100 and plate 68[f]) and Adaïma (Midant-Reynes and Buchez 2002:454) as well as funerary contexts at sites like Abydos (Randall-MacIver and Mace 1902: plate IX; Payne 2000:21, Fig. 14, nos 57-59) and Naga el-Mashayikh (BMFA 12.1182 – 12.1185). However, unlike at least one example from Naga el-Mashayikh (BMFA 12.1182) which has decoration defined by a series of punctuates, those from the settlement at el-Mahâsna are devoid of decoration. While cattle figurines in both clay and ivory were recovered from the cemetery at el-Mahâsna (Aryton and Loat 1911: plates XIX, no. 2, and XXI, nos 5 and 8), these figurines are different from the settlement area examples. Being much more naturalistic in their depiction of bovines, these figurines include well defined limbs and in some cases facial features.

As was noted above, many of the cattle figurines show evidence of wear suggesting that they were being utilized in the context of the structure in Excavation Block 3. This is further supported by the broken nature of some of the figurines (ex. MAP 3149.001 and 3149.002) as well as the presence of the numerous figurine fragments discussed below. Finally, based on their co-occurrence with the female figurines discussed above and other items of a ceremonial nature (see Section 7.2.5) it would appear that the animal figurines were serving a ceremonial or ritual function within the settlement and are not examples of items being manufactured for inclusion in graves.

6.4.3 Figurine Fragments

As previously mentioned, a total of 54 figurine fragments were also recovered during the 2000 season at el-Mahâsna. These fragments have been examined for cross-mends in an effort to further classify the fragments, but this has not resulted in further clarification to final form. Of the total fragments recovered, 85.2% (n = 46) were recovered from secure Predynastic period contexts, while the remaining eight fragments were recovered from surface (n = 3) or disturbed contexts (Habitation Phase 3GAR, n = 2; Block 7, n = 3). The origin of those fragments from secure contexts in summarized in Table 6.17. As can be seen in this table, the vast majority (91.3%, n = 42) of the fragments from secure contexts originate from Block 3. Further, the majority of the fragments are not only associated with Block 3, but more specifically directly associated with the floor deposits of Phases 3D and 3E.

Table 6.16: Summary information for zoomorphic figurines.

	Provenience									Measurements (cm)			
MAP Number	**OP**	**Locus**	**Lot**	**Habitation Phase**	**Material**	**Temper**	**Complete?**	**Description**	**Portion Preserved**	**Length**	**Width**	**Height of Body**	**Width Between Horns**
933	17	2	1	3GAR	Fired Nile Silt	Normal		Cattle figurine	body and head	---	---	---	---
969	16	2	3	3A	Unfired Nile Silt	Sand		Possible ram figurine	head and neck	---	---	---	---
1205	16	2	1	3GAR	Fired Nile Silt	Normal		Cattle figurine, horns missing and had fully formed legs at one time.	body and head	5.76	*2.63*	*3.13*	1.75
1799	18	49	3	3C	Unfired Nile Silt	Sand	X	Small crescent shaped horns	horns only	---	---	---	---
2408	25	96	2	4C	Unfired Nile Silt	Untempered		Single horn from a cattle figurine	single horn only	---	---	---	---
2456	16	49	5	3D	Unfired Nile Silt	---	X	Complete cattle figurine.	complete	*5.26*	*2.19*	*2.3*	2.33
2562.001	36	49	1	3B	Unfired Nile Silt	Untempered	X	Complete cattle figurine that appears to have the back legs indicated by small protrusions at the hind end.	whole body	*4.41*	*1.37*	*1.86*	1.09
2562.002	36	49	1	3B	Unfired Nile Silt	Untempered		Head of a cattle figurine	head	2.8	1.74	1.74	---
2974	20	49	6	3D	Unfired Nile Silt	Untempered		Head and neck of a cattle figurine. Slash marks incised on neck area.	head and neck	4.01	*1.49*	*1.91*	*1.48*
2981	20	49	7	3D	Unfired Nile Silt	Untempered		Head of cattle figurine	head	3.98	1.18	1.9	---
2989.001	23	49	8	3D	Unfired	Untempered		Head and	head and	2.5	*1.33*	*1.99*	*1.94*

	Provenience									Measurements (cm)			
MAP Number	**OP**	**Locus**	**Lot**	**Habitation Phase**	**Material**	**Temper**	**Complete?**	**Description**	**Portion Preserved**	**Length**	**Width**	**Height of Body**	**Width Between Horns**
					Nile Silt			small portion of neck of a cattle figurine. Slash marks are incised on neck portion.	neck				
3002	16	49	7	3D	Unfired Nile Silt	Untempered		Head and neck of cattle figurine. May have slash marks incised on neck.	head and neck	3.63	*1.84*	*2.64*	1.31
3013	18	49	7	3D	Unfired Nile Silt	Untempered	X	Large complete cattle figurine depicting on the head and neck of animal. Horns are missing and ends are worn at break	Complete.	*5.83*	*3.33*	*4.12*	3.33
3030	19	49	7	3D	Unfired Nile Silt	Untempered		Head and head and majority of the body of a cattle figurine	head and majority of body	3.88	1.7	*2.81*	2.19
3054	16	49	7	3D	Unfired Nile Silt	Untempered		Neck and portion of head of a cattle figurine. Slash marks incised on neck.	neck and portion of head	3.65	*1.48*	1.65	---
3149.001	35	49	8	3D	Unfired Nile Silt	Untempered	X	Nearly complete cattle figurine.	nearly complete	*6.0*	*1.85*	*2.76*	1.53

	Provenience									Measurements (cm)			
MAP Number	**OP**	**Locus**	**Lot**	**Habitation Phase**	**Material**	**Temper**	**Complete?**	**Description**	**Portion Preserved**	**Length**	**Width**	**Height of Body**	**Width Between Horns**
								Several small fragments missing.					
3149.002	35	49	8	3D	Unfired Nile Silt	Untempered	X	Nearly complete cattle figurine.	nearly complete	*5.75*	*1.51*	1.71	2.06
3149.003	35	49	8	3D	Unfired Nile Silt	Untempered	X	Complete cattle figurine.	complete	*3.39*	*1.66*	*1.82*	1.67
3149.005	35	49	8	3D	Unfired Nile Silt	Untempered		Rump area of cattle figurine only.	rump	1.37	*1.56*	*1.59*	
3149.006	35	49	8	3D	Unfired Nile Silt	Untempered		Head of cattle figurine.	head	2.76	*1.63*	*2.05*	1.01
3152	11	38	14	Wall Cleaning	Unfired Nile Silt	Untempered		Head of cattle figurine. Appears to be missing a thin veneer on top of head and shoulders.	head and neck	4.61	*2.47*	*3.45*	3.3
3257.001	23	49	9	3D	Unfired Nile Silt	Untempered	X	Possible head of a cattle figurine.	head	*1.87*	*1.79*	2.73	---
3277	35	49	8	3D	Unfired Nile Silt	Untempered	X	Complete cattle figurine	complete	*3.33*	*1.24*	*1.47*	*1.44*
3296.001	20	117	1	3E	Unfired Nile Silt	Untempered	X	Complete cattle figurine	complete	*4.27*	*1.63*	*2*	*1.08*
3296.002	20	117	1	3E	Unfired Nile Silt	Untempered		Head of a cattle figurine.	head	2.37	*1.38*	1.89	---

Note: Measurements were taken at the maximum point for a particular dimension. Further, measurements shown in italics indicate that the figure was preserved in its entirety for that dimension.

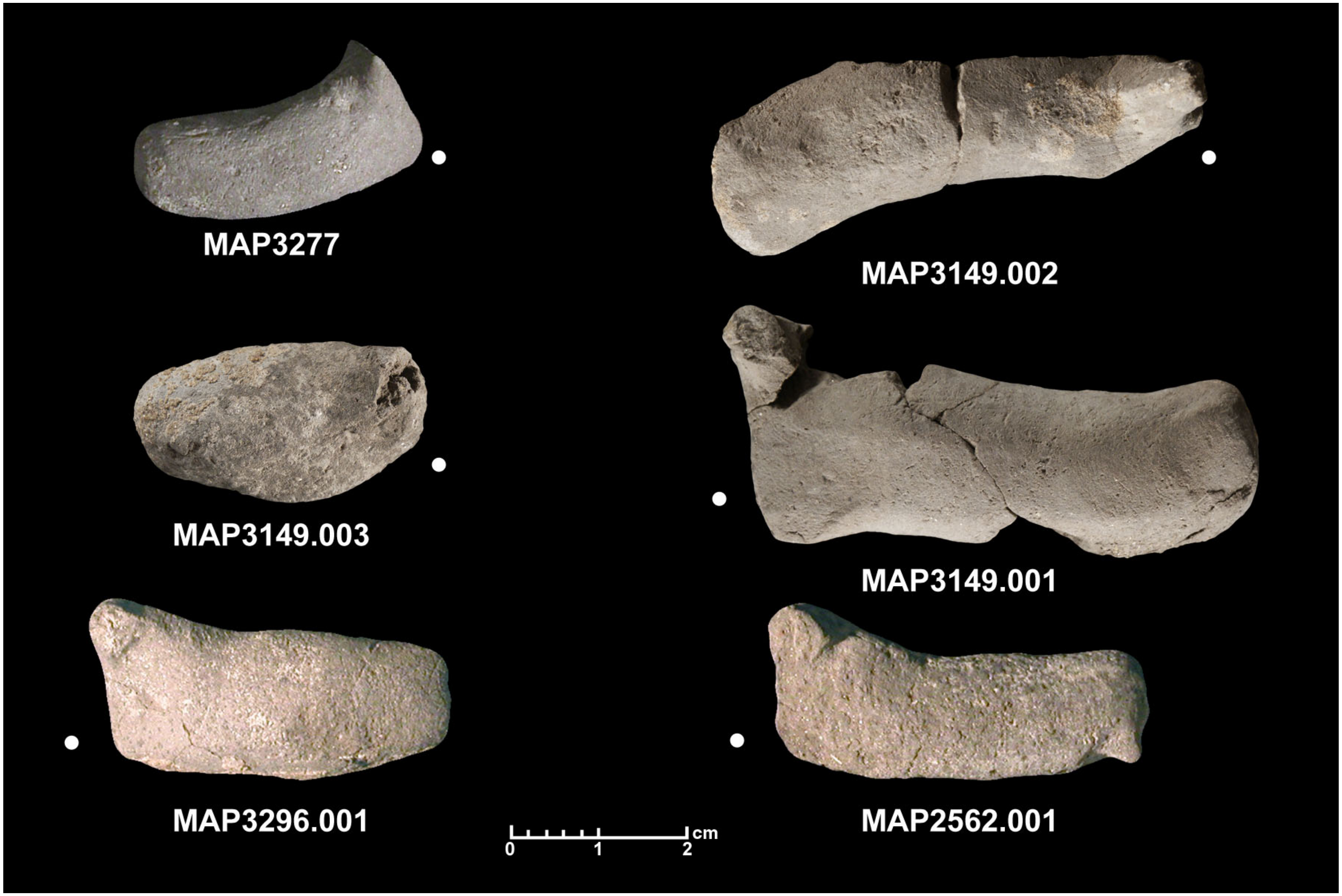

Figure 6.50: Selection of zoomorphic figurines recovered at el-Mahâsna. (White dot indicates face of animal.)

Figure 6.51: Cattle figurine with slash mark incisions on neck.

Table 6.17: Origin of figurine fragments from secure Predynastic contexts.

Habitation Phase	Quantity
1B	1
3A	2
3B	4
3D	34
3E	2
4A	1
4C	1
5B	1

Each of the figurine fragments from secure contexts was examined to determine the presence or absence tempering agent having been added to the clays. This analysis revealed that 80.4% (n = 37) of the fragments were untempered, and 10.9% (n = 5) were tempered with sand. Two of the remaining four fragments did not have information recorded for temper, while chaff and normal tempering were both represented by individual specimens.

With the exception of a single specimen, all of the figurine fragments from secure contexts were unfired, Nile silt clays. The single specimen that shows evidence for having been fired is MAP3333, which was recovered from Habitation Phase 3A deposits. However, it is unclear if the piece has been intentionally fired, or only exposed to heat subsequent to its manufacture.

Table 6.18: Summary of recovered figurine fragments.

MAP Number	OP	Locus	Lot	Habitation Phase	Material	Temper	Quantity
396.001	General Surface	0	PP13	surface	Fired Nile Silt	Normal	1
396.002	General Surface	0	PP13	surface	Fired Nile Silt	Normal	1
961	10	43	1	3A	Unfired Nile Silt	Normal	1
1134	14	47	4	4A	Unfired Nile Silt	Chaff	1
1206	16	2	1	3GAR	Unfired Nile Silt	Untempered	1
1383	SC-N1060 E925	0	0	surface	Unfired Nile Silt	Normal	1
1387	18	49	1	3B	Unfired Nile Silt	Sand	4
1483	17	2	1	3GAR	Unfired Nile Silt	not recorded	1
2422	27	99	1	4C	Unfired Nile Silt	Untempered	1
2529	20	49	4	3D	Unfired Nile Silt	Untempered	1
2658	44	108	3	5B	Unfired Nile Silt	Untempered	1
2823	31	109	1	1B	Unfired Nile Silt	Untempered	1
2906	46	119	1	7A	Unfired Nile Silt	Untempered	3
2930	23	95	2	3D	Unfired Nile Silt	Sand	1
2979	18	49	6	3D	Unfired Nile Silt	not recorded	1
2989.002	23	49	8	3D	Unfired Nile Silt	Untempered	2
2990	36	49	6	3D	Unfired Nile Silt	Untempered	2
2991	19	49	6	3D	Unfired Nile Silt	Untempered	1
3012	18	49	7	3D	Unfired Nile Silt	Untempered	1
3014	18	49	7	3D	Unfired Nile Silt	Untempered	4
3021	18	49	7	3D	Unfired Nile Silt	Untempered	1
3028	19	95	1	3D	Unfired Nile Silt	Untempered	1
3040	23	49	8	3D	Unfired Nile Silt	Untempered	1
3125	22	49	5	3D	Unfired Nile Silt	Untempered	2
3135	22	49	5	3D	Unfired Nile Silt	Untempered	1
3149.004	35	49	8	3D	Unfired Nile Silt	Untempered	5
3242	39	49	5	3D	Unfired Nile Silt	Untempered	1
3246	41	49	4	3D	Unfired Nile Silt	Untempered	3
3250	36	49	7	3D	Unfired Nile Silt	Untempered	4
3257.002	23	49	9	3D	Unfired Nile Silt	Untempered	1
3292	20	117	1	3E	Unfired Nile Silt	Untempered	1
3299.001	38	49	3	3D	Unfired Nile Silt	Untempered	1
3322	16	117	1	3E	Unfired Nile Silt	Untempered	1
3333	10	2	4	3A	Fired(?) Nile Silt	not recorded	1

6.5 MISCELLANEOUS OTHER ARTIFACT CATEGORIES

6.5.1 Weapons

A small number (n = 7) of items that can be classified as weapons or weaponry have been recovered from the recent excavations at el-Mahâsna. These include projectile points and fragments of a stone mace head. The projectile points recovered include five of chipped stone and a single ivory specimen already discussed above (section 6.3.2). Three of the chipped stone specimens (MAP numbers 395, 3029, and 2528; Figure 6.52) are finished items, while two of the recovered specimens appear to represent pre-forms or unfinished examples. These unfinished examples were both recovered from surface contexts in the area between Blocks 3 and 4.

The three finished items are all concave-based arrowheads of the type which Gilbert has recently designated Type 1a, and are typical of the Naqada I-II (Gilbert 2004: 50-55). Of these, two (MAP 2528 and 3029) were recovered from the floor deposits associated with the large structure identified in Block 3 (Section 5.2.3.4). The third specimen (MAP 395) was recovered from the surface in the northern end of Block 4. In all three cases, these arrowheads are characterized by the incredibly fine attention paid to the pressure flaking used in their manufacture. The edges of each point have been finished with a very fine serration or denticulation, while the interior of the basal concavity has been slightly ground.

In addition to the six projectile points, a single diorite mace head comprised of two conjoining fragments was also found (Figure 6.52; right). Recovered lying upon the mud flooring of the structure associated with Habitation Phase 3D, and in close proximity to the two arrowheads just discussed, this item is a finely polished conical mace head (Type 1a [Ciałowicz 1987: 15-17) and measures 8.8 cm in diameter and 1.9 cm in thickness. The central, biconically drilled hole has a minimum diameter of 1.2 cm and has also been well polished, removing all traces of drilling process. While classified as a weapon, this item most likely served a symbolic or ceremonial purpose rather than functional as the small diameter of the central hole would not have allowed for the insertion of a handle sufficiently sturdy to withstand the force of impact. This type of mace head is more characteristic of the Naqada I period but is also know from the early Naqada II (Ciałowicz 1987). The deposits from which it was recovered date to the Naqada Ic-IIab. It is interesting to note that Ciałowicz sees this time as the time during which there is a possible shift from maces serving primarily as weapons to serving a more symbolic function indicative of power or ritual offerings (1987:54-55). According to Lucas and Harris (1962:409) diorite of this variety was most likely obtained in the region surrounding Aswan.

Figure 6.52: Chipped stone arrowheads (left) and a stone mace head (right) recovered from el-Mahâsna.

6.5.2 Spindle Whorls

A total of 28 objects that I have classified as spindle whorls were recovered from both surface and excavated contexts (Figure 6.53 and Table 6.19). In nearly 90% (n = 25) of the cases, these objects consist of sherds of ceramic vessels that have been modified through intentional grinding in order to make them circular/nearly circular, and then drilled in their centers.[35] The function of these perforated ceramic disks has been much debated among Predynastic scholars. Both Needler (1984) and Rizkana and Seeher (1989) question assigning these items to the functional category of spindle whorls. Needler argues that "this is improbable because they would not twirl evenly nor receive a sufficiently strong wooden shaft: they are too

[35] The remaining 10.1% of the spindle whorls consist of two intentionally made ceramic spindle whorls one with a bi-convex profile (Figure 6.53; MAP3925), and a third specimen consisting of circular stone disk with a centrally drilled hole.

light and too irregular in outline…and the perforation is usually too small, off-center and at a distinctly oblique angle” (Needler 1984:293). She goes on to suggest that they may have been tied together in sets of three or four and used as bolas for hunting birds and small animals.

Needler’s arguments against these items functioning as spindle whorls are based on a subjective analysis of the size and shape of the objects. If, as Needler states they are too light to have allowed for sufficient spin and pull to create string from plant fibers, surely these items would not have been sufficiently heavy (even in sets of three or four) to provide for adequate throwing velocity to have served as bolas. Needler also bases her argument on the placement and size of the central hole. A metric analysis of 20 of the recovered specimens at el-Mahâsna revealed that the hole perforating the disks are nearly central with no more than 0.25 cm of variation away from the center of the piece. When measured, these central holes have a mean diameter of 0.60 cm (n = 20) and range from as small as 0.3 cm to as large a 1.17 cm. When compared to a sample of data obtained from objects known to be utilized as spindle whorls in Mexico (Fauman-Fichman 1999:fig. 84) the central hole diameters from el-Mahâsna specimens are only 0.06 cm smaller on average than the Mexican examples. Further when the mean diameters of the two samples are compared, this weak difference is shown to be statistically very insignificant (t = -0.894, df = 32, p =0.378). Therefore, in contradiction to both Needler and Rizkana and Seeher I believe that these items may in fact have functioned as spindle whorls, especially in light of the near lack of what have been interpreted as specifically manufactured spindle whorls at el-Mahâsna, Adaïma (Midant-Reynes and Buchez 2002), and Predynastic settlements MA21/83 and MA21a/83 near Armant (Ginter and Kozłowski 1994).

As can be seen in Table 6.19, spindle whorls are more prevalent in Blocks 2 and 3 than in Block 1, and are absent in Blocks 4, 5, 8 and 9, suggesting a greater focus on fiber based industries such as textile, or cordage production in Blocks 2 and 3 than in other portions of the site.

Table 6.19: Distribution of spindle whorls from el-el-Mahâsna.

Provenience	Quantity	Density per m^3
Surface	3	-
Excavation Block 1	4	0.08
Excavation Block 2	5	0.24
Excavation Block 3	16	0.13
Total	28	

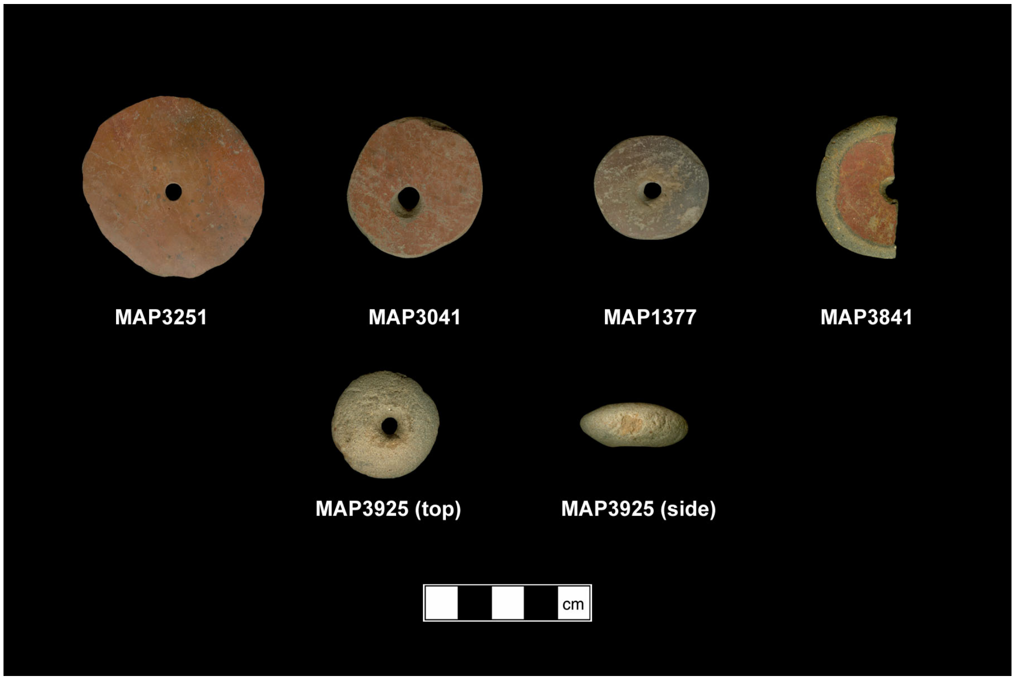

Figure 6.53: Representative specimens of spindle whorls from el-Mahâsna.

6.5.3 Copper Items

Item manufactured of copper were very rare at the Predynastic settlement of el-Mahâsna with only five items recovered during the 1995-2000 excavations which include two needles, one awl, and one fish hook (Table 6.20). With the exception of the copper bead (MAP1485) which is not sufficiently well preserved, each of the copper objects is very finely crafted and appear to have been manufactured using a hammer-anvil technique as opposed to having been cast in their final forms (Figure 6.54). Both of the needles are characterized by thicker, round midsections which taper toward both ends. The eye of the needle is formed by the end having be bent back on itself into a spiral. The fish hook and awl on the other hand are characterized by a square cross section that has been beaten/ground into a round point on one end. The square end of the awl suggests that this object was inserted into a wooden or bone handle. The distribution of these objects is limited to Blocks 1 and 3.

Table 6.20: Copper items recovered at el-Mahâsna.

MAP	Operation	Locus	Lot	Habitation Phase	Object Type
1485	18	49	1	3B	Bead
1591	31	2	1	1A	Fish Hook
1592	31	2	1	1A	Needle
2829	42	44	1	1A	Awl
3298	38	49	3	3D	Needle

Figure 6.54: Copper objects from el-Mahâsna.

6.5.4 Beads and Pendants

A surprisingly low number of beads and pendants were recovered at el-Mahâsna during the 1995-2000 field seasons. Only 23 total specimens were recovered, with only 13 originating in secure, Predynastic contexts. Of the remaining 10 specimens, three originated in Habitation Phase 3GAR and seven were recovered from surface contexts.[36] Materials used in the manufacture of beads recovered from Predynastic contexts vary widely as can be seen in Table 6.21. While many of these materials are locally available in the greater Abydos region (ceramic,

[36] These surface and phase 3GAR materials have not been included in the analyses since it is possible that these items may have originated from later Old Kingdom/First Intermediate Period tombs looted in antiquity/modern times and excavated by Garstang.

faience, wood, breccia, and possibly ostrich eggshell), several other of the materials have origins in more distant parts of the Nile Valley (copper and green serpentine – Eastern Desert [Lucas and Harris 1962:205, 420]; and coral – Red Sea Coast [Lucas and Harris 1962:392-393]). Additionally, two specimens appear to have been manufactured of lapis lazuli whose nearest source is northeast Afghanistan (Lucas and Harris 1962:399). However, the identification of lapis has not been confirmed and it is known that sodalite, a blue stone without the gold flecks characteristic of lapis that is found in the Western Desert areas of Egypt, can be easily confused with true lapis (Nekhen News 1987:9; Griswold 1992a:71). In either case, these objects would indicate materials originating outside the valley proper.

Table 6.21: Beads and pendants recovered from el-Mahâsna.

MAP Number	OP	Locus	Lot	Object Type	Material	Habitation Phase	Quantity
Beads from Surface and Disturbed Contexts							
806	SC - N1270 E910	0	0	Bead	UID Stone	surface	1
840	SC - N1285 E970	0	0	Bead	Faience	surface	2
860	SC - N1285 E985	0	0	Bead	UID Stone	surface	1
877	SC - N1300 E955	0	0	Bead	Faience	surface	2
881	SC - N1296 E969.50	0	0	Bead	Faience	surface	1
945	17	2	1	Bead	Ceramic	3GAR	1
1212	10	2	1	Bead	Ostrich Eggshell	3GAR	1
1509	22	2	1	Bead	UID Stone	3GAR	1
						Subtotal:	10
Beads from Secure Predynastic Contexts							
190	2	1	2	Bead	Ostrich Eggshell	8A	1
1039	4	2	3	Bead	Coral	1B	1
1485	18	49	1	Bead	Copper	3B	1
1565	24	47	1	Bead	Green Serpentine	4A	1
1846.001	30	44	1	Pendant	Lapis	1A	1
1846.002	30	44	1	Bead	Lapis	1A	1
2686	37	49	3	Bead	Wood	3C	1
2771	7	44	2	Bead	Calcite	1B	1
2791	43	44	2	Bead	Faience	1A	1
3011	18	49	7	Bead	Ceramic	3D	1
3052	16	49	7	Bead	UID Stone	3D	1
3245	39	49	5	Pendant	Breccia	3D	1
3291	39	49	4	Bead	UID Stone	3D	1
						Subtotal:	13
						Total Beads:	23

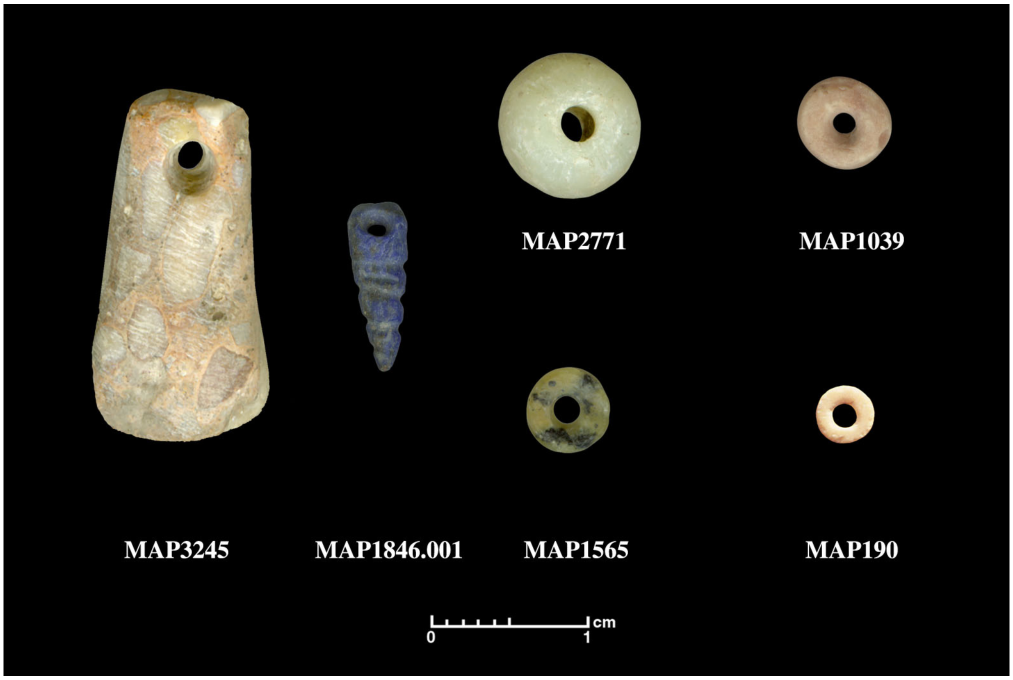

Figure 6.55: Sample of Beads and Pendants recovered from el-Mahâsna.

6.5.5 Administrative Items

This category includes those items that appear to indicate potential administrative activities at the site; specifically sealing fragments and mud jar sealings/stoppers. A total of fourteen objects have been recovered to date at el-Mahâsna that appear to represent fragments of sealings or mud jar stoppers (Table 6.22). The sealings are fragments of unfired, untempered Nile clay and have impressions of either cordage or fabric on one face, while the other face is either a convex, unshaped form, or has a depression, sometimes with visible fingerprint markings. In no cases do these items have discernable seal impressions such as are found on examples from later periods. A total of nine sealings were recovered, with only six of these coming from secure, Predynastic deposits. Of the six from Predynastic levels, 50% were recovered from Excavation Block 3 (Phases 3B and 3C) and the remaining three examples came from Excavation Block 1 (n = 2; 33%) and Excavation Block 2 (n = 1; 17%). While the classification of the three examples from Block 3 as sealing fragments is definitive, those examples from Blocks 1 and 2 are only tentatively classified as such, and may represent fragments of other mud remains such as the mud plastered area of living surface Locus 62 in Block 1.

Jar sealings, or stoppers, are lumps of unfired Nile mud, sometimes tempered with straw or chaff. These are typically circular with a rounded or dome shaped upper surface, with the lower surface usually roughly flat, with the exception of an impression running around the circumference caused by the rim of the vessel that it sealed. A total of seven jar sealings were recovered. Two of the jar sealings were recovered in association with a possible brew kiln (Locus 36; see Section 7.2.2 for a discussion of this feature) identified at the far southern end of the site, and most likely associated with the kiln structures identified by Garstang (1903:7). These two examples were unbaked and did not contain seal impressions on their upper surfaces, but did still preserve impressions of the modeled rims of the jars that they were used to seal (Figure 6.56). Of the remaining three examples, two originated in deposits associated with Habitation Phase 3B, while one each was recovered from Phases 3C and 3D in Excavation Block 3. These are deposits directly associated with the floor of the large structure identified in this area.

Table 6.22: Administrative objects recovered during the 2000 season at el-Mahâsna.

MAP Number	Operation	Locus	Lot	Object Type	Habitation Phase
691	South section cut	36	1	Jar Sealing	
692	South section cut	36	1	Jar Sealing	
852	SC - N1285 E970	0	0	Sealing	
935	17	2	1	Sealing	3GAR
1033	4	37	1	Sealing ?	1A
1038	4	2	3	Sealing ?	1B
1263	18	2	1	Sealing	3GAR
1282	10	49	1	Sealing	3B
1462	13	38	8	Sealing ?	2B
1771	20	2	1	Jar Sealing	3GAR
1772	16	49	1	Sealing	3B
1797	17	49	3	Sealing	3C
1961	16	49	2	Jar Sealing	3C
2566.001	35	49	1	Jar Sealing	3B
2566.002	35	49	1	Jar Sealing	3B
2953	10	49	4	Jar Sealing	3D

Figure 6.56: Mud jar sealings recovered from Locus 36.

6.5.6 Grinding Stones

Sixteen grinding stone or grinding stone fragments have been recovered from el-Mahâsna since 1995 (Table 6.23). These items include both fragments of querns (saddle-querns), mortars (those with a circular-shaped), pestles (longer cylindrical shaped items), and hand grinders (what are commonly referred to in New World settings as *manos*). In the case of the first – third types of grinding implements, these are typically manufactured of quartzite which is known geologically from several locations in Egypt (Aston et al. 2000:53-54; Lucas and Harris 1962:62-63), but only known to have been quarried at two locations in antiquity; one near Cairo and the other near Aswan (Klemm and Klemm 1993:283-303 cited in M. Adams 2005:504). Therefore, quartzite items would have required extra effort to obtain and indicate interactions with groups either to the north or south of the Abydos region by members of the el-Mahâsna community.

The fourth type of grinding implement, the hand grinders, are modified, naturally occurring large flint nodules. These items are typically slightly crescent shaped in plan view, but loaf shaped in cross-section with one face ground smooth through use. These are used in conjunction with the querns and are well known from depictions in later period tomb scenes as well as tomb servant statues of the Old Kingdom (ex. BMFA 21.2601; OIM10637, OIM10638).

From Table 6.23 it can be seen that the majority of the recovered grinding stone items were recovered from Excavation Block 3 deposits, with the exception of two items (MAP1293 and MAP1612) which were recovered from Block 1. Those recovered from surface contexts were found just south of Block 3 and just west of Block 4 or in the plowed area at the southern end of the site (Figure 6.57)

6.6 SUMMARY

In summary, the artifact assemblage at el-Mahâsna, taken together with the structural remains discussed in Chapter 5.0 , reveals several interesting patterns relative to nature of activities which occurred in the different areas of the site as well as to the “individuals” who inhabited those areas. These patterns are discussed in Chapter 7.0 as they relate to the identification of elites and the potential for competition for power within this late Naqada I – Naqada II community.

Table 6.23: Grinding stones recovered at el-Mahâsna.

MAP Number	Operation	Locus	Lot	Material Type	Type of Grinding Stone	Habitation Phase
Grinding Stones from Surface or Disturbed Contexts						
6	SC - N996.5 E1020.5	0	0	Quartzite	Quern	
119	SC - N940 E1045	0	0	UID Stone	Quern	
124	General Surface, north end of Plowed Area	0	0	UID Stone	Quern	
125	General Surface, north end of Plowed Area	0	0	Flint, nodule	Hand Grinder	
404	N1268.59 E974.91	0	PP19	UID Stone	Quern	
1747	N1319.50 E928.74	0	PP24	UID Stone	Quern	
1382	17	2	1	Quartzite	Quern	3GAR
1500	22	2	1	Quartzite	Quern	3GAR
1824	33	2	1	Quartzite	Possible grinding stone	3GAR
Grinding Stones from Excavated Contexts						
1293	5	44	1	Flint, nodule	Hand Grinder	1A
1612	26	62	3	Quartzite	Quern	1A
2917	20	49	5	Flint, tabular slab (?)	Hand Grinder	3D
2918	16	49	5	Quartzite	Mortar	3D
2997	23	49	8	Flint, nodule	Hand Grinder	3D
3009	16	49	7	UID Stone	Quern	3D
3260	18	49	6	Quartzite	Quern	3D

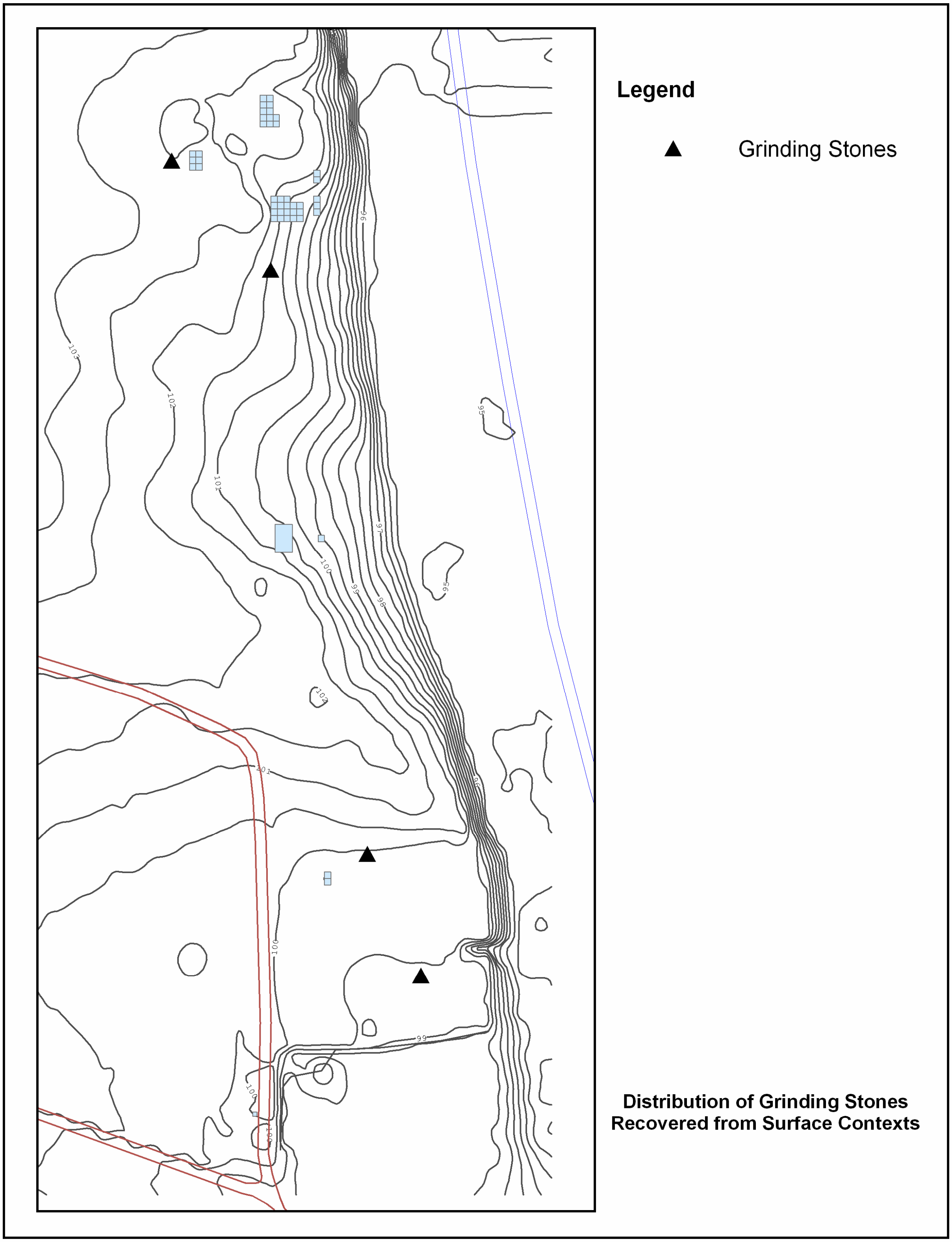

Figure 6.57: Distribution of grinding stones recovered from surface contexts.

7.0 DISCUSSION OF RESULTS AND CONCLUSIONS

In Section 3.3 I discussed several implications derived from the models proposed by Hassan and Kemp to account for the development of social inequality and eventually the formation of the central state in the Nile Valley. Based on these implications, I suggested a number of hypothetical patterns of elite activity one might see in the archaeological record that could be used to evaluate the nature of power and competition in the village at el-Mahâsna, and by extension, the Upper Egyptian Predynastic as a whole. In this final chapter, I use the results presented in the previous two chapters to evaluate the degree to which each pattern is present or absent in the el-Mahâsna data. At a most basic level, evaluation of these patterns relies on determining whether one or more than one locus of elite activity is present at el-Mahâsna. Once accomplished, it is then necessary to conduct a closer examination of the nature of intra-loci activities which have occurred in each area.

I begin by discussing the identification of elite areas and the criteria used in this process. This is followed by an evaluation of the data relative to each of the five hypothetical patterns of activities expected within elite areas. Next, I discuss implications the results from el-Mahâsna may have on the larger issue of what role management versus competition may have played in the development of social complexity and early leadership in Egypt. Finally, I present a discussion of future research that I believe is needed relative to the nature of the internal structure of Predynastic settlements.

7.1 ELITES?

Identifying evidence of social hierarchy in the archaeological record has long been a focus of archaeologists, with various researchers offering criteria that can and should be used in the process (Brown 1981; Braun 1981; Costin and Earle 1989; Hayden and Gargett 1990; Hirth 1993; Hodder 1982; Lightfoot and Feinman 1982; O'Shea 1981, 1984; Peebles and Kus 1977; Smith 1987). In most cases, mortuary analysis and the examination of cemetery remains has received more attention than settlements, and Egypt, especially Predynastic Egypt, has been no exception (see Atzler 1981, W. Anderson 1989, 1992; Bard 1988, 1989, 1994; Castillos 1982; Griswold 1992a, 1992b; Savage 1995, 1997; and Wilkinson 1993, 1996; among others). In these studies, researchers evaluated the presence/absence and degree of social inequality through a combination of variables. Typically these have included some measure of the effort or labor required for the construction of the grave or tomb (usually evaluated through grave size [m^2 or m^3]); diversity of the grave assemblage; and a measure of wealth based upon the type of raw materials used in manufacturing the grave goods interred with the grave occupant (see. Richards 1992:47-84, and 2005: 54-59, 69-74 for a review). Further, in some studies (e.g. Bard 1994; and Wilkinson 1993, 1996) items believed to represent symbols of "eliteness," power, or authority (i.e. mace heads, decorated pottery, etc.) have also been used.

From Wilkinson's (1993, 1996) analysis of the several Upper Egyptian Predynastic cemeteries, including el-Mahâsna, it is clear that social stratification, and thus elites, existed at el-Mahâsna since, at least, mid-Naqada I times. However, in order to examine the nature of their power base and possible evidence for competition between these elites, it is first necessary to develop a method for identifying elite areas within the settlement. This can be accomplished by using a modification to the approach used in mortuary studies of the Predynastic and succeeding periods. Of particular importantance when identifying elite areas at el-Mahâsna to focus more attention on measures of wealth, as used in the analysis of mortuary contexts, as opposed to symbolic representations of social differentiation and authority, as objects of this kind will be examined in an effort to elucidate the activities and practices of elites within the community once identified. Therefore, the method employed in this study computes what I have chosen to call an Elite Index Score for each area by using a combination of two variables to differentiate elite from non-elite areas of the site. Values for each variable were computed for each area, and the various excavation blocks at el-Mahâsna were ranked according to each variable in order from greatest to smallest. Next, the order of ranking for each area was divided by the total number of rankings within that variable, thus providing a rank score number ranging from zero to one for each variable. Finally, the resulting rank scores from both variables were added together and divided by two, resulting in a final Elite Index Score for each area with a standardized value between zero and one.

The first variable used in computing the Elite Index Score is a measure of the level of effort or labor expended in the construction of structures in a specific excavation block. This variable was calculated using the mean diameter of posts employed in construction as a proxy for the level of effort expended in construction; the assumption being that larger diameter posts required greater wealth to acquire, and greater physical effort to transport and subsequently erect. Once the mean diameter was computed, these values were plotted to see if differences existed between the areas and if so, were these differences statistically significant. As can be seen in Figure 7.1, the structures in Blocks 3 and 8 both had significantly higher levels of effort expended than did those in Blocks 1 and 4, which themselves are similar to one another. Block 3 also shows significantly more expenditure of effort in its construction than the structure in Block 8. Using this information, each block was assigned a rank score from zero to four, with four being the highest expenditure (assigned to Block 3) and one being the lowest (Table 7.1), Blocks 1 and 4 were both assigned scores of two since their mean diameters were nearly identical in size, and Blocks 2 and 5 were assigned values of one.[37]

The second variable used in computing the Elite Index Score is an index of wealth based upon that developed by Richards (1992) in her study of Middle Kingdom mortuary remains at Abydos. This index uses access to different raw materials, particularly those obtained through long distance trade as the basis for determining the wealth of the grave, or in this case, the inhabitants of a particular area. Richards calculated a wealth index value for each raw material based on ranked values assigned to the effort expended in obtaining and working these materials using five factors: distance, mode of transport, extraction, processing and hardness (Richards 1992:111). Once values were calculated, materials were then ranked according to the total score and then assigned a new value based on their overall placement in the ranking (Richards 2005:111). Having obtained these values, a wealth index value for each grave was then obtained by adding up the individual values for each raw material present, counting each raw material only once, no matter how many times it occurred in a grave.

[37] Block 9 was not included in the analysis of elite index since no structure was apparent and no wealth items were identified in the block. Blocks 6 and 7 were not included as they were not Predynastic habitation areas, but rather areas highly disturbed by early 20th century activities.

A similar process was conducted for the materials recovered from the various excavation areas at el-Mahâsna. However, unlike for the graves in Richards' study only those raw materials that were slightly unusual were used, i.e. materials that were not ceramic, bone, or flint. These materials included ivory, quartzite, copper, serpentine, lapis, etc.[38] Once a total score was calculated for each Excavation Block, the blocks were ranked from one to four, with four being assigned to Blocks 1 and 3, which both had the highest wealth values of 99, followed by Block 4 with the next highest value at 26. Scores for Blocks 2, and 8 each received rankings of 2 with values of 14, and Block 5 was ranked lowest as no wealth items were recovered (Table 7.1).

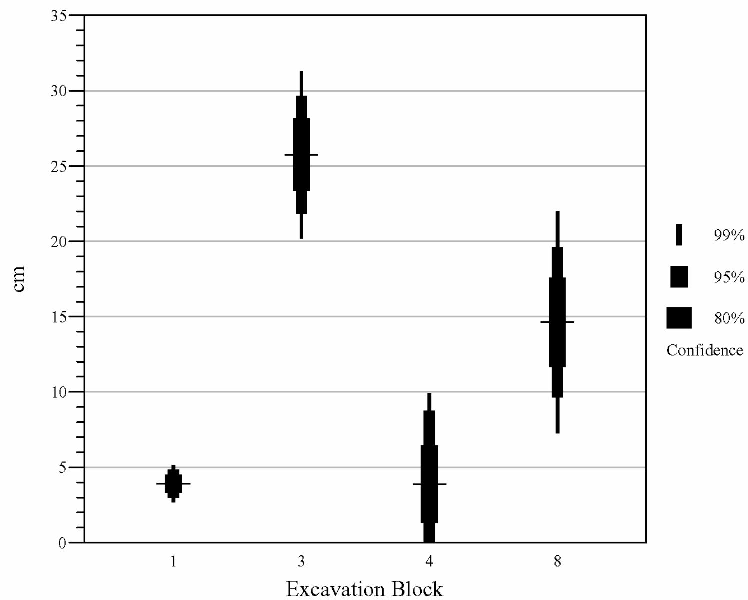

Figure 7.1: Comparison of mean post diameter in each excavation block.

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[38] Where materials were identified at el-Mahâsna that were not included in Richards' table of wealth index scores (Richards 2005:111), the values for materials of similar origin, extraction method, hardness, etc. were used based on information provided in Richards (1992:appendix 4). Additionally, the value for lapis lazuli was reduced from 19 to 17 in the ranking in an attempt to account for the possibility that this material is in fact sodalite (see page 236) and could be obtained from sources closer than lapis lazuli which would have originated in Afghanistan.

The ranking scores obtained from the effort of expenditure and wealth index calculations were standardized by dividing each ranking by the total number of ranks in that variable and then adding these resulting values together. Finally, this resulting value was divided by two in order to create a resulting Elite Index Score of zero to one that could be used to compare the various areas (Figure 7.2).

The results of this analysis reveal that Block 3, by far, has the highest Elite Index score suggesting that it is unique within the settlement. Blocks 1, 4, and 8 on the other hand have very similar scores to each other suggesting that these areas do not show substantial differences in "eliteness" from each other and most likely represent "typical" members of the el-Mahâsna community. It should be noted that along with Block 3, Block 1 had the highest wealth index score and is in fact closer in overall Elite Index Score to Block 3 than any of the other blocks. However, Block 1 is much closer in over all score to Blocks 4 and 8 than to Block 3, with Block 3 having a score 0.25 higher than Block 1, while Block 1 is only 0.125 higher than the scores of both Blocks 4 and 8. The very low Elite Index Scores for Blocks 2 and 5 are most likely the result of two factors. First, these areas are devoid of structural remains (Block 2 had only a single post identified) and therefore were ranked lowest among the blocks in associated expenditure of effort scores. Secondly, these two areas appear to be either external activity areas with Block 2 (and possibly Block 5) associated with Block 3, or they represent trash disposal areas for Block 3, or elsewhere. In the later case, they would be expected to contain less long distance raw materials as these items would be more highly valued and thus less likely to end up in a disposal context.

In summary, from this analysis it would appear that only a single locus of elite activity was identified at el-Mahâsna, and is centered around Excavation Block 3. As discussed above in Section 5.1, because of the near lack of surface artifacts from categories other than ceramics and lithics it is not possible to know conclusively if Block 3 is the only elite locus present within the entire site as large portions of the site area have yet to be excavated. Nevertheless, the evidence available at this time suggests the presence of a single locus of elite activity surrounding Block 3, with a possible second area around Block 1 that may be beginning, or attempting to engage in some elite behavior. In the next section, I will examine the nature of this primary elite area in comparison to other excavated areas of the site focusing on patterns of activities/artifacts as predicted from the managerial and competition models that have been proposed by Kemp (1989, 2006) and Hassan (1988) for the Predynastic.

Table 7.1: Values used in the calculation of the Elite Index.

Excavation Block	Expenditure of Effort Index		Wealth Index			Final Elite Index Score
	Effort Ranking	Effort Rank Score	Wealth Index Score	Wealth Index Ranking	Wealth Rank Score	
1	2	0.5	99	4	1	0.75
2	1	0.25	14	2	0.50	0.38
3	4	1	99	4	0.1	1.00
4	2	0.5	26	3	0.75	0.63
5	1	0.25	0	1	0.25	0.25
8	3	0.75	14	2	0.50	0.63

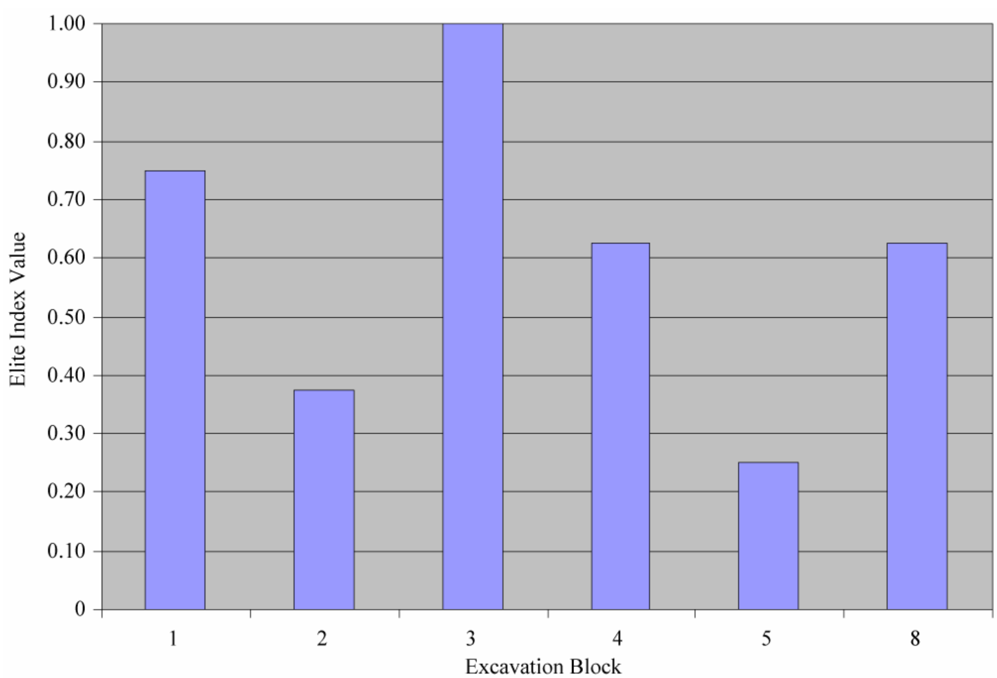

Figure 7.2: Elite Index Scores for each Excavation Block

7.2 DISTRIBUTION OF MATERIALS AND THEIR RELATIONSHIP TO HYPOTHESIZED PATTERNS OF ELITE ACTIVITY

7.2.1 Evidence for Storage and Accumulation of Subsistence Goods

In his model, Hassan (1989) proposed that elites in Predynastic society functioned as mangers in the production and storage of subsistence goods; a role obtained based upon a perceived divine right of the individual or family to rule. I have suggested that if such were the case, than we would expect to find only a single elite locus within the settlement at el-Mahâsna, and that this locus would have evidence of larger scale, centralized storage facilities. I have also suggested, however, that such facilities would be expected to occur in association with the multiple loci of elite activity as predicted by Kemp's model if elites are using the management of subsistence products as the primary benefit provided to their factional supporters. In either case, a pattern of larger scale storage of subsistence goods found in association with elite areas would imply that managerial benefits contributed to a greater extent in the development of complex society and power within Predynastic Egypt than did competition for power where the benefits provided to factional supporters focused on the distribution of non-subsistence goods.

Prior to initiation of the 2000 season excavations at el-Mahâsna, it was expected that evidence of storage within the community would be seen through a combination of the presence of large storage pits, potentially lined with basketry, and large ceramic vessels suitable for the storage of agricultural products. Such vessels typically would be found in more "permanent" positions, i.e. inset in floors, and would be well suited for the storage of grain. Also, it was expected that such items would occur with regular frequency in each of the households identified, but with greater frequency in elite loci or a centralized storage area. Evidence obtained from the 1995 and 2000 excavations however, recovered little evidence of storage within the community as a whole. Storage pits were only identified in Block 8 where a single large, basketry lined pit was uncovered (Locus 6; Section 5.2.8.1 above). Evidence of storage was identified in Block 3 by the presence of several storage jars set into the living surface of the large structure. Nevertheless, in both of these cases, identified storage facilities cannot be regarded as "large scale" facilities intended for the centralized storage and redistribution of subsistence goods as predicted by the managerial models despite the apparent elite nature of the remains in Excavation Block 3.

In addition to storage features and complete storage vessels, the distribution of jar fragments was also examined to see if a differentially higher occurrence of these vessel types was present in any particular portion of the site. First, the distribution of all jar forms, regardless of overall vessel size, was considered through examining what proportion of the ceramic assemblage of each block was comprised of these vessel types. As can be seen in Figure 7.3, little difference exists in the proportion of all jar forms present, with proportions only varying slightly more than ten percent between Block 4 with the lowest proportion (23.21 ± 11.28), and Block 8 with the highest proportion (33.33 ± 15.26%), a rather modest difference of only moderate statistical significance ($0.20 > p > 0.05$). An examination of the distribution of large jar forms (i.e. those with orifice diameters of ≥ 35cm) reveals a pattern of even more equal distribution (Figure 7.4). Block 1 has the highest proportion of large jars (4.1 ± 4.6%), Blocks 3 and 4 have nearly equal proportions at 1.83 ± 1.77% and 1.79 ± 3.54% of their assemblages respectively, while these forms are absent from Blocks 2 and 8. Again, the observed differences in the proportions of large jars present is weak and only moderately statistically significant.

Taken together, the near lack of storage pits with the low amount of storage jars/jar fragments does not suggest a concentration of storage in any particular area of the site. Elites do not appear to have been heavily involved in the storage and management of subsistence goods. This is not say that elites are not involved in managing the production, processing, and redistribution of subsistence goods, only that they do not seem to be involved in the storage of goods once produced.

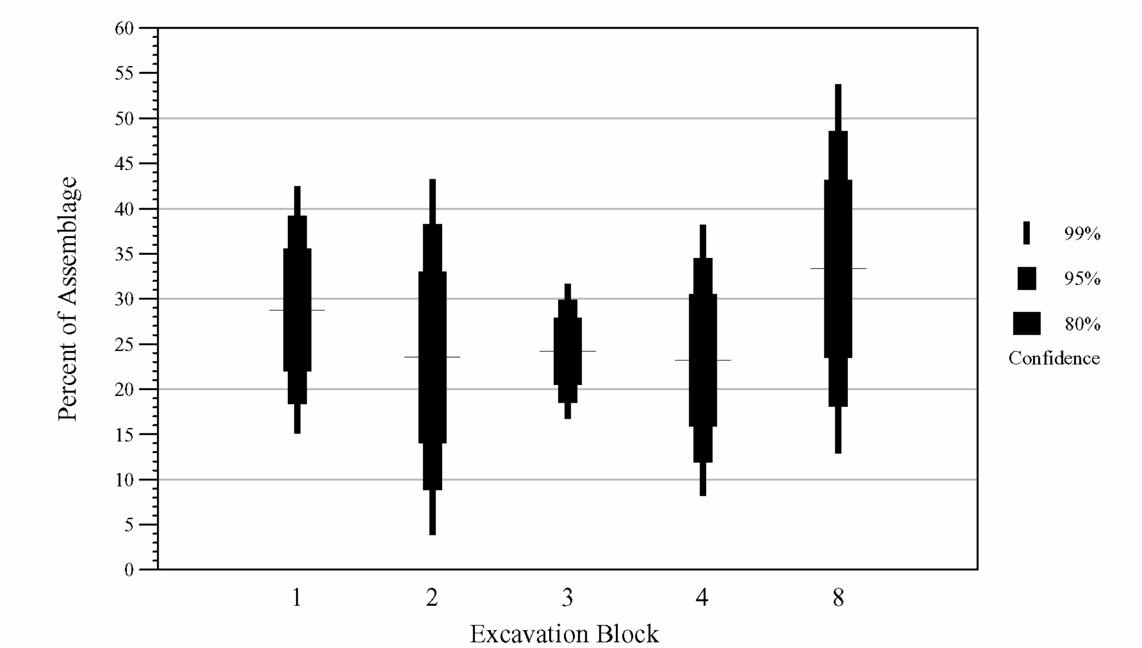

Figure 7.3: Comparison of the proportion of all jar forms within each of the excavation blocks.

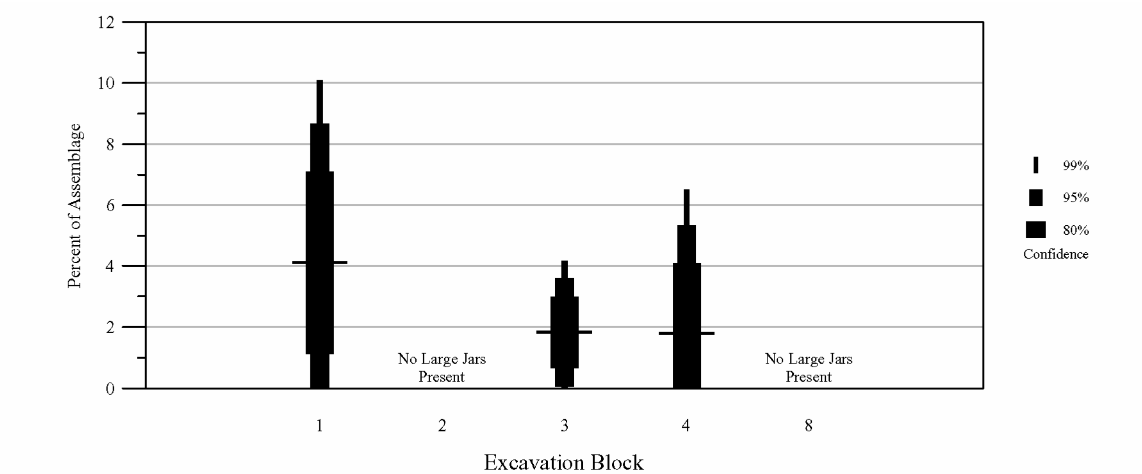

Figure 7.4: Comparison of the proportion of large jars from each excavation block.

7.2.2 Evidence for Redistribution and Feasting

In both managerial and factional competition models, elites are thought to engage in the redistribution of subsistence goods and large scale feasting. These activities would be connected with elite individuals and families who were either in charge of managing the subsistence materials, or who were redistributing the goods in a manner that was used to reward factional supporters. In either case, I have suggested that these activities might be seen at el-Mahâsna through the presence of vessels of standardized sizes that may have been used in measuring rations of grain/beer as known from historic periods (Kemp 2006:174-178), and the presence of brewing and/or baking facilities capable of producing quantities of these items in excess of household consumption levels. Also, evidence for feasting might be seen in the differential distribution of serving vessels (shallow bowls and platters) which would have been used during these activities (Clark and Blake 1994; Feinman, Kowalewski, and Blanton 1984; Hastdorf 1993). Finally, activities associated with feasting might be seen in the distribution of artifacts utilized in preparing food and beverages served to guests during feasts; namely grinding stones for flour and large basins/vats used in the mixing and proofing of dough for bread and beer.

The use of standardized vessel sizes for redistribution is known from the historic periods and relies on the equal capacity or volume of a vessel for the equal portioning of the product in question. Determining vessel volume is best accomplished with complete or nearly complete vessels. However, with a near lack of complete ceramic vessels from el-Mahâsna, it is necessary to utilize sherds for this purpose. While it is recognized that orifice diameter does not directly correlate with overall vessel volume, it is the only variable for which consistent data is available and has here been utilized as an estimate of overall vessel size. In order to determine whether standardized vessel sizes existed at el-Mahâsna, the frequency of vessel diameters was plotted for all jar, bowl, and beaker forms (Figure 7.5). These vessels forms were chosen as they represent the majority of forms recovered at the site, and given their general forms, they could be used for measuring either dry or wet goods with consistent results. Platters and shallow bowls were excluded from this analysis since they are less likely to be used in measuring given their shallow nature. Basins were also excluded due to their large, open nature. From the graph in Figure 7.5 it can be seen that for both jar forms and bowls/beakers, the distribution of vessel diameters is nearly continuous, with jar forms showing slightly more small discontinuities in the upper end of the spectrum. If standardized vessel sizes were present, one would expect to see multi-modality in the distribution, rather than the continuous distribution that is present. Therefore, it does not appear that vessels of standardized size were present at el-Mahâsna, and thus it is not possible to examine redistribution in this fashion.

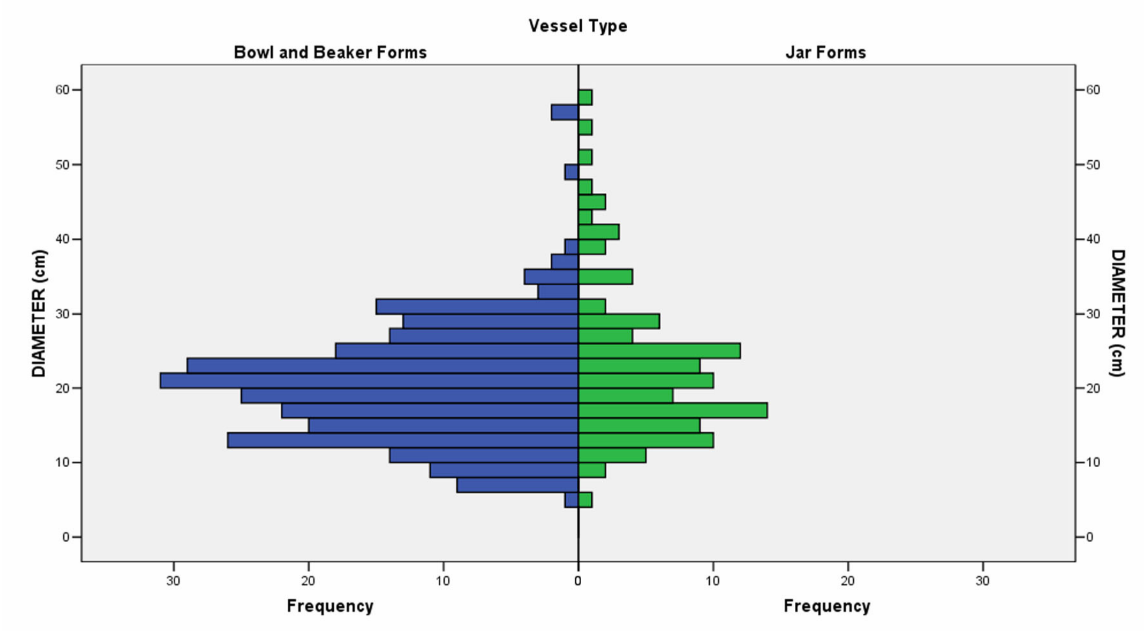

Figure 7.5: Comparison of ceramic vessel size.

Feasting is a form of redistribution, where subsistence goods, including specialty foods, are given out during the feast in quantities that would not require standardized vessels sizes. Feasting is typically identified in the archaeological record by the presence of a differential distribution of vessels (shallow bowls and platters) which would have been used to serve and consume food and drink during the feast (Clark and Blake 1994; Feinman, Kowalewski, and Blanton 1984; Hastdorf 1993). The distribution of shallow bowls, platters, and drinking cups or miniature bowls was examined at el-Mahâsna and was discussed above in Section 6.1.4. There it was shown that these vessel types did not occur in significantly different proportions in any particular area of the site. Shallow bowls and platters combined do not account for more than 11% of any block's assemblage and do not vary in their proportion more than 4.1%, except for in Block 2, where they do not occur. Miniature bowls, which most likely served as drinking cups, show greater variation, varying from as little as 2.56 ± 5.12% of the assemblage in Block 8 to as much as 8.82 ± 9.83% in Block 2. However, while these proportions may vary, the differences between blocks are statistically weak ($p > 0.20$; see Figure 6.9 above). This is not surprising given the small number of miniature bowls that were recovered from the site as a whole and individual blocks in particular ($n = 22$, *mean* = 4.4, $s = 4.87$).

Examining the remains of the actual process of feasting, namely serving vessels, is only one approach for identifying the evidence of feasting. Another method is to consider the distribution of artifacts/features used in producing the food and beverages served at these feasting events: i.e. grinding stones for preparing flour for making bread/beer, and large ceramic basins/vats used in the mixing and proofing of dough for the bread.[39] Sixteen grinding stones/grinding stone fragments have been recovered from surface and excavation contexts at el-Mahâsna. Grindstones were only recovered from secure contexts in Block 1 ($n = 2$) and Block 3 ($n = 5$), while an additional three grinding stones were recovered from the disturbed upper horizon in Block 3 (see Table 6.23 and Figure 6.57 above). This concentration of grinding implements originating in and around Block 3 suggests that grinding of grain was taking place here more than in the other areas.

Large basins and deep bowls may be associated with the preparation of dough for use in baking and brewing. An examination of the distribution of these vessel forms reveals that they are present in significantly higher proportions ($0.05 > p > 0.01$) in Block 2, where they represent just under 25% of the ceramic assemblage, than elsewhere on the site (Figure 7.6). It is interesting to note that only Block 2 has evidence of a large complex hearth feature capable of producing high levels of heat for an extended period of time (Locus 52; Section 5.2.2.1). This feature may in some way be associated with baking bread which from later depictions we know was baked in ceramic bread molds (at least some of the varieties) in open air settings (Ancient Egypt Research Associates 2005). Further, if Block 2 represents an outdoor activity area/trash area associated with activities taking place in Block 3, as has been suggested, then these baking/brewing activities may be also associated with Block 3.

A final line of evidence for feasting preparations is the presence of brewing facilities at the site capable of producing quantities in excess of the normal household level of consumption. A reanalysis by Geller (1992) of kiln remains uncovered by Garstang (1902, 1903) at the southern end of el-Mahâsna indicate that a number of beer kilns were present at the site. From descriptions of the area where these were found (Garstang 1903:7) they most likely were located in the far, southernmost portion of the site that has subsequently been destroyed in modern times by leveling of approximately 0.8 ha of area with heavy machinery (see Section 4.1.1.1 above).

[39] It should be noted here that when I am referring to bread, I am also including the potential for beer production since the process involves making a lightly baked loaf of bread that is subsequently used in the brewing process (Geller 1992 :124-125). Also, the vessels utilized in the process of making the dough for bread and in the early beer making process are very similar in shape to those depicted in tomb reliefs showing the process, such as those in the Tomb of Ti at Saqqara (Wild 1966:113-114).

While Garstang is vague concerning the exact number of beer kilns uncovered, it would appear from his descriptions that at least four were found (1903:7). These beer kilns were described as very large ceramic vessels supported by vertical bars of brick with some of the pots potentially as large as 1.4 m in height (Garstang 1902:39-40). Examination of the vertical section cuts caused by the destruction of the southern area of the site in 1995 and again in 2000 revealed several hearth structures (Figure 7.7) as well as a large, nearly completely destroyed pyrotechnic feature, at the base of which were fragments of several partially baked mud/clay bricks (Figure 7.8). Also found in association with this possible kiln feature were two unbaked mud jar stoppers which, while not containing seals on their upper surfaces, still preserved impressions of the modeled rims of the jars they were used to seal (see Figure 6.56 above). Aside from these remains, no evidence of brewing kilns was identified during the 1995-2000 excavations at the site.

In summary, it would appear that aside from Garstang's beer kilns and Locus 36 just discussed, the only other evidence of feasting is an unusually high number of grinding stones, and a larger proportion of deep bowls and basins presumably used in bread/beer making found in association with the Block 3 (and Block 2) complex.

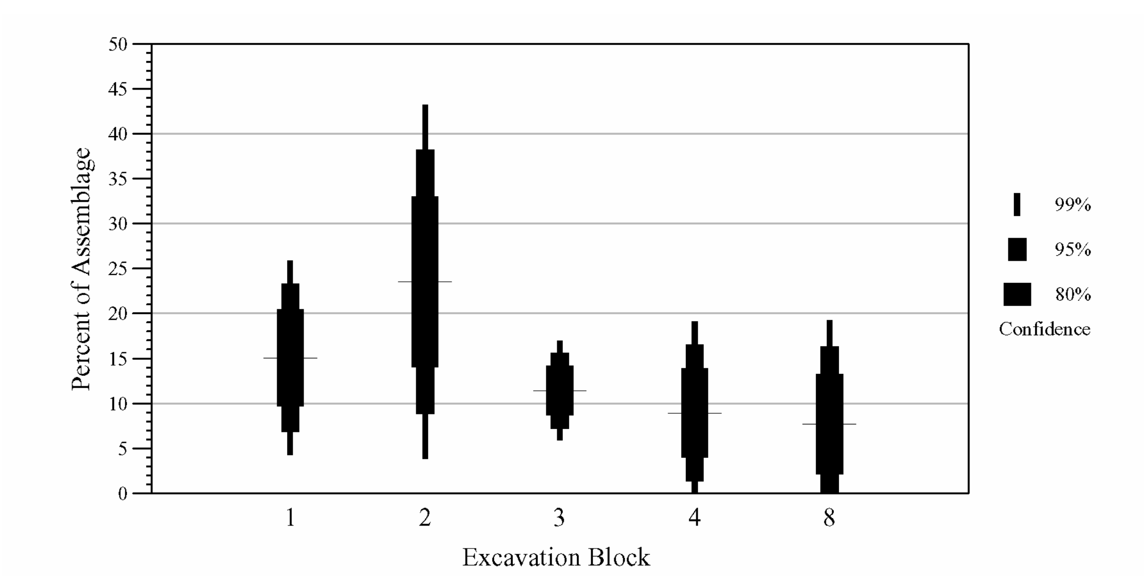

Figure 7.6: Comparison of the proportion of deep bowl and basin vessel forms in each excavation area.

Figure 7.7: Hearth feature in the section cut at the southern end of el-Mahâsna.

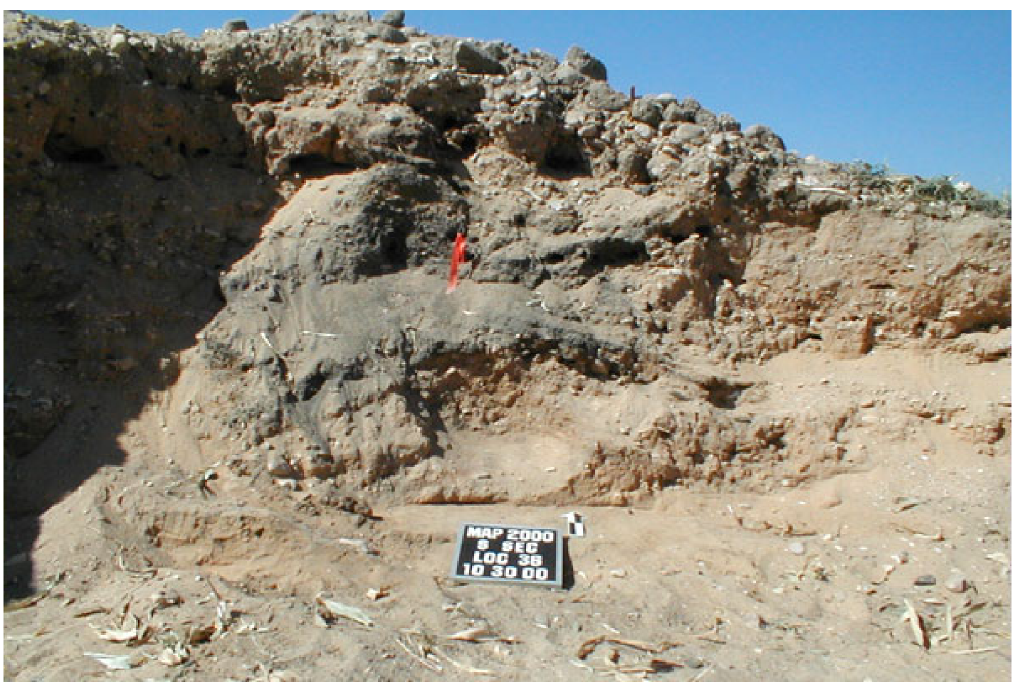

Figure 7.8: Remains of a possible beer kiln (Locus 36) in the disturbed southern area of el-Mahâsna.

7.2.3 Evidence for the Production of Funerary and Luxury Goods

Savage (1995:288-296) believes that there is evidence to suggest that elites competing for power in Predynastic society did so using different economic strategies, one of which was the production of luxury goods, specifically ceramics and groundstone vessels, for the mortuary "industry." Hoffman has also stated (1982, 1987a, and 1991) that production of certain ceramic forms/wares was closely tied to funerary purposes. To determine if elites at el-Mahâsna were participating in similar activities, the various artifact assemblages were examined for evidence of finished luxury items, tools used in their manufacture, as well as the byproducts of the manufacturing processes.

The manufacture of groundstone vessels begins with roughly shaping the raw block by chipping using a hard hammerstone; a process which produces fragments/debitage of the raw material being worked. Following this step, the vessel is drilled using a flint or quartzite drill bits that are either crescent or triangular in shape (Mallory 2000:175-178). Although the lithic assemblage recovered from el-Mahâsna has yet to subjected to full analysis, there did not appear to be any evidence of stone vessel manufacture taking place. No fragments of stone vessels were recovered, and only a few (< 5) pieces of debitage of raw materials typically associated with stone vessels (i.e. granite, basalt, breccia, serpentine) were identified. Additionally, at this time, no crescent or triangular drill bits were noted in the lithic assemblage.[40] Garstang did, however, recover several flint drill bits as well as a very finely executed stone vessel in the form of a frog, now in the collections of the University of Pennsylvania Museum (1903: pls. III and V). While never occurring in very large numbers in graves, it is interesting to note here that very few stone vessels were recovered from the Predynastic cemetery at el-Mahâsna excavated by Aryton and Loat (1911). This perhaps indicates that not only were the inhabitants of el-Mahâsna not producing groundstone vessels, but they also did not have substantial access to finished vessels, although the scarcity of vessels in the cemetery may be related to the extensive looting that was documented by the excavators.

[40] Although the vast quantity of lithic materials recovered during the 2000 season has not been analyzed, "exotic" raw materials other than flint were typically pulled during screening and brought to the attention of the excavators. The same is true of complete or nearly complete bifacially worked flint tools, as these were readily recognized by the workmen as being different from the ubiquitous flint debitage and naturally occurring fragments.

Very little other evidence suggesting specialized production activities has been recovered from el-Mahâsna, perhaps with the exception of textile production.[41] In Excavation Block 3 and associated Block 2, an unusually high number of awls and needles (both bone and copper [Sections 6.3 and 6.5.3]) as well as the majority (75%) of spindle whorls (Section 6.5.2) were recovered in these areas. Such a concentration of tools associated with processing and manufacture of fiber-based products (textiles) suggests the inhabitants of these areas were potentially focused on these industries. However, based solely upon the tools, it is not possible to determine the exact nature of the products being produced. If textiles were the end product, then we might make the assumption that these may have been fine quality textiles which in later periods are considered to be luxury goods. However, it is just as possible that the fibers being produced using the spindle whorls were being used for the production of fishing nets, although no items that might have been used as net gauges were recovered. Whatever may have been produced using the spindle whorls, awls, and needles, these constitute the only potential evidence for specialized production recovered thus far at el-Mahâsna.

7.2.4 Evidence for Interaction and Alliance Building at a Regional Level

The topic of, and evidence for, extra-regional interaction at el-Mahâsna has been explored above using the distribution of ceramics of non-local origin (Section 6.1.5.1). This analysis revealed a pattern suggesting that the inhabitants of Block 3 had much greater interaction with communities to the north and south of the Abydos region than did other members of the el-Mahâsna community. The quantities of ceramics recovered would appear to indicate a greater interaction with Hemamieh to the north than to Naqada and Hierakonpolis to the south. Although, these differences in quantity between “Naqada” wares and “Hemamieh” wares are not drastically different and therefore can be interpreted as showing that inhabitants of el-Mahâsna made a point to interact equally with their neighbors to the north and south. In addition to these two areas, they may also have had interactions with the Lower Egyptian Predynastic cultures as well as the

[41] This statement must remain preliminary, as the lithic debitage assemblage has not been analyzed. We know from Locality 29A at Hierakonpolis that from the debitage assemblages it is possible to identify the production of not only high quality bifacial tools, but also microdrills used in the production of stone beads (Holmes 1992:41-44).

cultures of Nubia as seen in the recovery of ceramics and ivory from these areas, although these items more likely were acquired from intermediaries rather than directly from the sources by individuals from el-Mahâsna. In either case, it is within Block 3 that we see the greatest evidence for interactions with groups from other regions. This interaction may not have been solely the right of these individuals/families as the other blocks all have items, although in much lower frequencies than Block 3, from these other regions. Given the pattern of lower concentrations in the other areas, it is possible that this may indicate members of Block 3 were controlling access to these commodities and redistributing them to others within the community; a practice know from later periods as well as other regions of the globe (Brunton 1975; Burns, Cooper and Wild 1972; Feil 1982; Helms 1979; Suttles 1991).

7.2.5 Evidence for Rituals and Ceremonies

Both Hassan and Kemp believe that whether elites are involved in the management of subsistence goods, or competing for power in other fashions, they use ritual and ideology as a method through which to legitimize and increase their power. In Hassan's view it is actually their position within the ritual and ideology of the time that provides elites with their rights to leadership and the management of communal resources (Hassan 1988:169-170). Moreover, Hassan believes that "the ability of leaders to integrate resources and mobilize people for cooperative agricultural work, defense, or conquest were primarily a function of their image as agents of divine power," (Hassan 1992:319). Therefore, as stated above, we should expect to see evidence for ritual practice connected with elite areas; exactly the pattern we see in Block 3 at el-Mahâsna.

In the discussion of the various artifact assemblages recovered from the site, I noted a number of times where Block 3 had unusually high amounts of certain types of items and remains compared to the other areas. This is particularly true with items and remains that appear to indicate ritual or ceremonial practices. Perhaps most notable is the occurrence in Block 3 of an exceptionally large concentration of both anthropomorphic and zoomorphic figurines which appear to have served a ritual purpose within the living community of el-Mahâsna, and were not solely for inclusion as grave goods. These figurines indicate an ideology focused on both women and cattle, a pattern noted by Hassan (1988, 1992, 2004), Hendrickx (2002), and Wengrow (2001), among others.

Additional evidence for ritual practices in Block 3 is the "specialized" nature of the faunal assemblage and its suggestions of ritual sacrifice and restricted consumption. As shown in detail above (see Section 6.2), faunal remains from Block 3 reveal a pattern of differential use of certain species and body parts relative to the other areas at el-Mahâsna. Block 3 shows an unusually high proportion of cattle remains, particularly young cattle, relative to the other areas, as well as a much higher incidence of the forelimbs of animals, again particularly cattle. It is precisely these types of meat (cattle) and body parts (forelimbs) that are most often depicted in scenes of offering and sacrifice from the later periods (Ikram 1995:129), suggesting that similar practices are taking place within the substantially built structure identified in Block 3. In addition to the domestic mammals, Block 3 is also the location of the greatest amount of wild mammal species including gazelle and hippopotamus. This suggests that at this time, the hunting and consumption of wild game was restricted to an elite activity having ritualistic implications as suggested by the motifs of hunting these and other wild species depicted on C-ware bowls from the Abydos region (Finkenstaedt 1980, 1981, 1982, 1985).

A similarly interesting pattern is seen in fish remains recovered from the site. While all families of fish identified at el-Mahâsna have been recovered in the four excavation blocks from which a large enough sample exists, it is primarily within Block 3 that we find very large specimens of Nile Perch, Tilapia, and catfish of the Clariidae family. Such a very restricted distribution would appear to indicate that individuals inhabiting Block 3 had a differential right to the best of the catch, a pattern seen in other chiefdom level societies (Earle 1977, 1987, 1990; Dillon 1985). The very large Nile Perch would appear to represent specimens of a special catch, given the special techniques needed to catch and land such large fish (Friedman 1996:24).

Friedman (1996) and Linseele and Van Neer (2003) note a similar pattern in the occurrence of faunal specimens form the early cultic/temple structure Locality 29A at Hierakonpolis. In this structure, domestic fauna is dominated by cattle and sheep/goat, particularly young sheep/goat remains. Unfortunately, data is not yet available on distribution of body parts from Locality 29A. Also of particular note is the high number of very large Nile Perch, crocodile and soft-shelled turtle, the last two of which are considered to be dangerous aquatic reptiles, as well as a greater occurrence of wild mammals, recovered from the temple areas (Linseele and Van Neer 2003:7). Linseele and Van Neer interpret this unusual assemblage as evidence of ritual activity, which based on seasonality data may have been related to festivals associated with the anticipated arrival of the annual Nile flood (2003:7).

Other evidence from Block 3 suggesting ritual and ceremonial practices includes the ceremonial mace head, weapons which might be associated with warfare or hunting of wild animals, and the presence of decorated pottery typically associated with ritual practices. Block 3 has a greater proportion of decorated wares in its ceramic assemblage than the other blocks, although this difference is only moderately statistically significant because of the overall small number of decorated wares recovered from the site. Nevertheless, the concentration of C- and D-ware vessel fragments found in, and around, Block 3 is interesting when considered along with other ritual elements present, since decorative motifs frequently depicted on these vessels are have been interpreted as illustrating rituals associated with hunting, warfare and elite ceremonies (Dreyer, et. al. 1998; Finkenstaedt 1980, 1981, 1982; Garfinkel 2001; Graff 2003, 2004; Midant-Reynes 1992, 2000; and Podzorski 2005).

In summary, it is only in Block 3 that we find substantial evidence of ritual and ceremonial activities. Moreover, these activities by nature of their occurrence in the context of an elite area suggest that, as believed by both Kemp and Hassan, elites were using ideology and ritual as a method to legitimize their positions of leadership. However, a lack of evidence for ritual activities elsewhere at the site suggests that ideology and ritual were not being actively used and manipulated in a competition for power as suggested by Savage (1995).

7.3 MANAGEMENT OR COMPETITION?

In the preceding sections and chapters, patterns of artifacts and activities recovered through surface collection and excavation at el-Mahâsna have been presented and discussed. These investigations were structured, and their methodologies developed in order to address the questions raised by Kemp and Hassan concerning the nature and basis of complex society in Predynastic Egypt; specifically to what extent this complexity can be understood from the perspective of managerial benefits to society and to what extent from the perspective of elite competition for power. For competing elites to successfully build factions and attract supporters, they must provide benefits to their supporters. These benefits may be the distribution of non-subsistence goods such as exotic long-distance trade items, or a less "concrete" benefit such as protection from rival factions or villages. However, the benefits received by factional supporters may be exactly the same as those provided by elites in managerial models, i.e. the management of subsistence resources in order to overcome periodic shortfalls. If managerial benefits were the driving force behind the development of social complexity in Predynastic Egypt, then one of two possible patterns should have been seen in the results from el-Mahâsna: (1) a single elite locus with evidence for centralized storage and management of subsistence goods, or (2) multiple elite loci whose primary focus is the storage and redistribution of subsistence goods. In either case, the management of subsistence resources and their redistribution would have been seen as having contributed to a greater extent in the development of social complexity than did other benefits. If on the other hand a pattern where multiple loci of elite activities, each focused on providing multiple or different benefits to their supporters, with managerial benefits utilized equally or less than other benefits, were found at el-Mahâsna, then such a pattern would be seen as showing that the process of elite competition for power contributed to a greater extent to the development of social complexity.

The patterns revealed at el-Mahâsna have, as is typically the case in archaeology, presented a much more complex situation than these idealized patterns derived by setting up a dichotomy between the two models and placing them at opposite ends of a spectrum. If we look at the pattern revealed from the work at el-Mahâsna, it appears that management of subsistence goods did not play a role in the dynamics of social complexity within this Predynastic community. In fact, little evidence of storage of subsistence goods was found anywhere except for several storage vessels and a single storage pit. Does this mean that elites played no role in the production of subsistence products? Not necessarily. The absence of storage facilities does not preclude elite involvement in the management of production. Storage facilities are simply a convenient and simplified way in which to archaeologically "look for" the management of subsistence activities. Managerial activities may have taken many forms related more to scheduling and organization of work parties than in the actual management of the products of these labors. Additionally, benefits received by society (or factional members for that matter) from a "managerial elite" may be even more esoteric and ideologically based, for as Kemp states when discussing the acquisition of agricultural surplus in a competition scenario, "Placating the gods through the development of shrines and the donation of produce under the supervision of a priestly elite achieves the same end" (Kemp 2006:74). If such is the case, then perhaps, the pattern we see at el-Mahâsna is one in which the elites of Block 3 are performing managerial benefits to society through performing rituals and organizing production for provisioning such rituals and sacrifices; thus in turn helping to guarantee the continued fertility and productivity of the valley.

So, does this mean that competition for power did not play a role in the development of social complexity in Predynastic Egypt? The identification of only a single locus of elite activity at el-Mahâsna would appear to indicate as such based on the patterns predicted from the models. While Block 1 does appear to have more "elite tendencies" than Blocks 4 and 8 according to its Elite Index Score, it is still difficult to compare it to Block 3 once the elements of ritual, ceremony, and potential production for feasting are taken into account. However, we must be very cautious in rushing to dismiss competition as a factor in the development of social complexity based on the el-Mahâsna data. This process is not necessarily one that occurs overnight or even within one or two generations (Kemp 2006:74-76). As Kemp proposes, the competition for control begins within individual settlements between multiple individuals/families with one faction eventually gaining the upper hand in a particular settlement. This "player" then goes on to compete against other "winners" on an increasingly larger regional scale, eventually leading to a single leader controlling a large regional polity where "sub-chiefs/leaders" exist within individual communities who may continue to compete to gain control of the larger polity. Given the rather late date of the materials recovered from el-Mahâsna, namely Naqada Ic-IIb/c, it is entirely possible that we are viewing the "game" once it has moved beyond the level of individual settlement and is being played on a regional scale between elites at the larger settlements of el-Mahâsna, Abydos, and Thinis who are competing for control of what eventually becomes Kemp's "Kingdom of This" (1989:34). If such is the case, then what we may be seeing at el-Mahâsna is a ceremonial/cult building connected with the elites of the community within which they are conducting ceremonies and rituals that provide a perceived benefit to the community which then in turn maintains the community's support for these "individuals" in their competition with elites from other communities. Another equally valid possibility is that there are other elite loci present at el-Mahâsna which were not identified given the methods used and the restricted area within which excavations were conducted. This could further be complicated by our understanding and knowledge of the basic nature of Predynastic settlements.

7.4 THE NATURE OF PREDYNASTIC SETTLEMENTS IN UPPER EGYPT AND RECOMMENDATIONS FOR FUTURE RESEARCH

Despite a concerted effort to increase our knowledge of Predynastic settlements in both Upper and Lower Egypt by researchers over the past three decades, many large gaps in our understanding of even the basic layout and structure of settlements still exist. The recent publication of reports on settlements at Adaïma (Midant-Reynes and Buchez 2004) and M23/M23A near Armant (Ginter and Kozłowski 1994), as well as the work of the Hierakonpolis Project (Friedman 1990, 1994, 1996, 1997, 2001; Harlan 1980, 1982, 1985; Hoffman 1980, 1982, 1987b; Hoffman and Berger 1982; among others) have made available valuable data increasing our knowledge of several aspects of Predynastic settlements. Hoffman's excavation of an Amratian period house in Locality HK29, and more recently the excavation of a house compound in Locality 11 (Watrall 2000:11-12 and 2001:8-9; Friedman 2001:10-11), provide a detailed window into the structure of individual houses and the spaces contained within and surrounding them. Excavations in various other localities at Hierakonpolis have allowed us to examine special purpose settlements such as a herding station, beer production areas, pottery workshops and kilns, and of course an early temple structure in Locality 29A. Nevertheless, most of these areas are separated by hundreds of meters, and in some cases more than a kilometer, and thus could be considered individual sites themselves.

But, is bigger better? With the publication of the multi-year research project at the Predynastic settlement and cemetery of Adaïma, scholars now have information on over 1000 m^2 of contiguous Predynastic settlement. In combination, the two volumes of this publication provide a wealth of information on various artifact assemblages recovered as well as detailed information on features and other structural remains uncovered. However, even this Herculean effort does not answer the basic question of the internal structure of Predynastic settlements. What is the typical size of houses? How are they positioned in relation to each other, or the site as a whole? Are there specific trash disposal zones as suggested at Hierakonpolis Locality 11?

Or does each household have its own midden directly adjacent to the house, a practice still common in rural Egyptian villages today? Are elite residences clustered in one restricted area of a settlement, or scattered and surrounded by lower classes who may have been attached in some way to the elite household like we see in later settlements such as the Abydos Settlement Site and el-Amarna? Or, did elites live in separate settlements? What is the nature of activities and activities areas within a Predynastic village? We know from Hierakonpolis and Peet's settlement at Abydos that special purpose sites exist. Are these sites the norm? Is the nature of the low desert settlements special purpose by definition and we really do not have data on typical settlements since these are buried in the floodplain? For that matter, what is a typical Predynastic settlement?

As can be seen from this laundry list, there are still many, basic questions to be answered about Predynastic settlements. Only through attempting to answer these questions can we hope to tackle larger issues of societal change and continuity throughout the Predynastic and into the historic periods. It is not my intention here to provide a definitive answer on how to rectify our situation, but rather to suggest several types of studies/methodologies that should be pursued in future Predynastic research.

First, we need to obtain data from both large and small settlements. The settlements at Hierakonpolis, Naqada, Adaïma, and el-Mahâsna that have been investigated represent settlements from the larger end of the size spectrum for sites known from the low desert area. While these sites have provided an incredible wealth of information, we need more data from smaller settlements such as en-Nawâhid and el-Barâghit located south of Abydos near the modern villages from which they derive their names. Both of these settlements are relatively small (ca. 1 ha.), and relatively intact, though both are threaten by growth of the modern villages. It is important to obtain this information soon, as agricultural development taking place along the low desert edge through large portions of Upper Egypt is rapidly destroying Predynastic sites, particularly the smaller sites which are less visible, generally unknown to the local Inspectorate staff, and therefore not protected from these development activities.

For any settlement, the data most needed is representative spatial data from which to reconstruct the composition and internal layout of these villages. An approach that combines controlled surface collections, such as those described for el-Mahâsna, and a blend of both systematically and randomly place excavation areas can help to achieve this goal. However, while the surface collections at el-Mahâsna provided interesting data on the locations of areas with a higher density of occupation, they failed to provide sufficient information on the nature of past activities in these areas as well as the social status of those who occupied them. Only through controlled excavation can these data be obtained.

Secondly, even larger exposures within individual settlements are needed, but not at the expense of tight horizontal provenience control. Often in excavations in Egypt, the basic unit of excavation is a 5 x 5 or 10 x 10 meter square. These sizes are too large for the nature of the remains and data that is to be recovered from Predynastic contexts. At el-Mahâsna the largest single excavation unit employed was 3 x 3 meters in size, which was even too large in some instances to provide adequate control, especially within the context of living floors. In these instances, units were subdivided into individual lots of 1 x 1 meter size, allowing for more control in the collection of artifacts important to understanding intra-site/intra-structure activity areas. Larger excavation exposures need to be such that the interplay of structure positioning and activity areas surrounding and within structures can be examined, not through small windows, but through large expanses.

Third, detailed intra-site spatial analysis studies need to be undertaken, such as those now typically employed on large scale cultural resource management excavations in North America (Anderson et al. 2005; McAndrews 2005; Bergmen et al. 1996; among many others) and other areas of the globe. Accomplishing this task requires controlled, detailed excavations, preferably utilizing areas of large horizontal exposure. However, sampling units that have been statistically selected to provide representative samples from every area of a site can also be used to achieve the same goal. Excavations need to be followed by detailed, interdisciplinary analysis of the artifacts and ecofacts, followed by spatial analysis using statistical techniques that have proven utility in elucidating patterns of past human activity.

Finally, data is desperately needed from sites within the alluvial flood plain areas of the valley. Work by various research groups in the Delta have proven that it is possible to obtain data from the Predynastic periods, even in very deeply buried situations under the water table, such as the work by the German Institute of Archaeology, Cairo at Tell el-Fara'in/Buto (von der Way 1997). Yet, with perhaps the exception of the work of Hoffman in a sondage in the ancient town area of Nekhen at Hierakonpolis (Hoffman 1986, 1987b, 1989; Hoffman et al. 1987; Friedman and Adams 2000:15; Hikade 2000:15-16) and Harlan's (1985) survey of canal areas, very little attention has been given to locating and investigating Predynastic settlements in the alluvial plain of Upper and Middle Egypt. Research is needed to allow for a geomorphological reconstruction of the movement and behavior of the Nile channel, deposition and erosion caused by such movements, and changes in the base level of the river over the millennia. Such a reconstruction could allow for the prediction of those locations with the greatest potential to yield buried Predynastic period habitation remains and thus areas at which to conduct targeted test excavations designed to find these elusive sites that we know had to have existed. Such research needs to involve a series of deep, mechanical core borings conducted by a team of trained fluvial geomorphologists, geologists, and archaeologists. These studies need to include not only an examination of the sediment cores and any artifacts retrieved, but also an extensive program of carbon dating the sediments that are identified, either through AMS or bulk soil dates, thus allowing for a diachronic reconstruction of the valley bottom area.

Without attempting to find and excavate these settlements, we will always be missing a large portion of the archaeological record as it pertains to the Predynastic inhabitants of the Nile Valley. Who is to say that the evidence we need to answer larger questions concerning the beginnings of Egyptian civilization, development of social complexity, formation of the state, and rise of a single divine ruler is to be found in the low desert and not the alluvial plain?

APPENDIX A

SUMMARY OF DEFINED LOCI

The following presents summary information for all Locus numbers that were assigned at el-Mahâsna from 1995-2006.

Table A.1: Summary of defined Loci at el-Mahâsna.

Locus Number	Operations where present	Feature Type	Feature Description	Assigned to Habitation Phase(s)
0	Surface	Stratum-Surface	Surface Material	
1	1, 1ext, 2	Stratum-Plow zone	Plow Zone Material at south end of site	8A
2	all	Stratum-Gebel	Natural Surface Material	1A, 2A, 3A, 3B, 4A, 5A, 6A, 7A
3	1 and 2	Dark Stain	dark stain with charcoal and ash	8A
4	1	Plaster (?) floor	Possible Plaster (?) floor remnant	8A
5	1	Hearth	hearth	8A
6	1	Pit	storage pit with basketry bottom	8A
7	1, 2, and 1ext	Pot	upside-down pot	8A
8	1, 1ext, and 2	Natural stratum	yellow sand underlying Predynastic materials	8B
9	1, 1ext, 2	Stratum-Predyn Habitation	Predynastic habitation materials under plowzone	8A
10	3	Stratum-Recent Alluvium	recent alluvium dumped on ground	9A
11	3	Stratum?	habitation materials	9A
12	3	staining	staining	9B
13	3	Stratum	stratum of darker material	9B
14	3	staining	might be same as Loc 12	9B
15	3	Pit	pit feature	9B
16	3	Stratum?	stratum?	9C
17	3	placeholder	placeholder	
18	2	placeholder	placeholder	
19	2	Mud ring (?)	mud ring in center of unit	8A
20		reserved	reserved	
21		reserved	reserved	
22	1	post mold	post mold	8A
23	1	post mold	post mold	8A

Locus Number	Operations where present	Feature Type	Feature Description	Assigned to Habitation Phase(s)
24	1	post mold	post mold	8A
25	1	post mold	post mold	8A
26	1	post mold	post mold	8A
27	1	post mold	post mold	8A
28	1	post mold	post mold	8A
29	1	post mold	post mold	8A
30	reserved			
31	reserved			
32	reserved			
33	reserved			
34	reserved			
35	reserved			
36	South E-W Section Cut	Beer Kiln	Beer kiln	
37	4	Living Surface?	Brown-white stain, floor	1A
38	11,12	Stratum-Cultural		2A & 2B
39	12	Pot-broken in place	Broken pot with contents, s. end	2A
40	12	Stain-circular	Dark circular stain, n. half	2A
41	4	Stain-circular	Dark stain, decaying organic/dung	1A
42	5	Hearth-shallow	Hearth, light ash	1A
43	10,16	Stain-irregular	Dark stain, irregular	3A
44	5	Stratum-Cultural	Pre-dyn habitation layer?	1A & 1B
45	16	Hearth ?	Possible hearth	3A
46	5	Lithic cache?	Lithic cache?	1B
47	14	Stratum-Cultural	Pre-dyn habitation layer?	4A, 4B, 4C
48	14	Stain-semi circular	Semi-circular area of light sand within 47	4A
49	10,16,17,18	Possible pre-dyn floor	Possible pre-dyn floor	3B, 3C, 3D, 3E
50	10	Pot	Jar/pot	3B
51	5	Post	Post with pottery?	1B
52	12	Hearth	Hearth	2A

Locus Number	Operations where present	Feature Type	Feature Description	Assigned to Habitation Phase(s)
53	10	Pot	Jar	3B
54	17	Artifact Cluster	Concentration of Bone, ceramic with organics &ash	3B
55	14	Artifact Cluster	Pottery concentration and stain in SW corner	4B
56	14	Hearth ?	Possible hearth in NW 1/4	4B
57	15	Stain-irregular	Large stain in east 1/2 of Op 15	4B
58	5	Post	Smaller post in Op 5	1B
59	6	Artifact Cluster	Possible human bones	1L
60	6	Artifact Cluster	Human bones	1L
61	6	Stain-irregular	Ash/darker sand	1B
62	7,26	Tomb-later	Later tomb pit?	
63	26	Living Floor surrounded by posts	Post line and house floor?	1A
64	6	Stratum-Cultural?	Yellow sand strat	1B & 1C
65	4	Living Surface	Pre-dyn house floor/gravel	1C
66	12,13	???	Light sand atop ashy layer	2A, 2B, 2C
67	11,13	Artifact Cluster	Artifact cluster: bone, ceramic, lithic	2A
68	21	Pot	Jar	3B
69	30	Pot-broken	Smashed pot	1A
70	11	Pit	Possible pit or infilled scour (erosion)	2A
71	33	Artifact Cluster	Ceramic with associated human cranium fragments	3B
72	10,16,20,21	Stain-irregular	Stained organic-burned area	3B
73	19	Pot and Posts	Posts and pot area location	3C & 3D
74	21,22	Hearth and living surface?	Hard packed sand and burned area	3B & 3C
75	25,28	Tomb-later	Later tomb disturbance	4L
76	10	Posts	Post molds	3B
77	30	Unknown		??

Locus Number	Operations where present	Feature Type	Feature Description	Assigned to Habitation Phase(s)
78	24,27	Stain-irregular	Narrow darker stain along W side of Locus 48, exte	4A & 4B
79	22	Postmold-mud ring	Large post mold	3C
80	12	Living Surface	Upper surface floor/goat pen?	2C
81	29	Tomb-later(?)	Burial	1C
82	22,23	Pot	Pot	3C
83	14	Stain-circular-ash	Ash concentration in the NE 1/4 of Op 14	4C
84	11	Artifact Cluster-seeds		2C
85	14	Stain-irregular-ash	Ash concentration in SE corner under post from Lot	4C
86	20	Pot-broken	Broken pot in situ	3D
87	8	Stratum-cultural or later tomb	Gravel oval	1L
88	12	Artifact Cluster-goat hair	Goat hair cluster	2C
89	12	Stratum-Natural	Silt stratum	2D, 5D
90	9	Stain-irregular-ash	Ash concentration in NE	1A
91	8	Sherd	Large sherd	1B
92	Unassigned			
93	11,13	Stratum-natural with Cultural materials	10 YR 6/4 Light brownish gray Fine sand < 10% silt	2C & 5C
94	11,13	Stratum-cultural	10 YR 6/3 Pale brown fine sand, stratified organic	2C
95	16,17,18,20,23	Living Surface-mud floor	Hard mud/plaster areas with cobbles	3D
96	15,25,28	Hearth?	Thick charcoal concent. in SE of Op15, E edge of O	4C
97	39	Pot-large	Large pot	3C
98	40	Stratum-Cultural	10 YR 5/3 Brown, medium texture sands	5A & 5B
99	27	Stain-circular-ash	Large ash concentration in S edge of Op 27 into S	4C

Locus Number	Operations where present	Feature Type	Feature Description	Assigned to Habitation Phase(s)
100	27	Stain-irregular-ash	Large ash concentration in W 1/2 of Op 27	4C
101	27,28	Stain-irregular-ash	Irregular ash stain in NE corner of Op 27 and SW corner of Op 28	4C
102	36	Pot-broken	Large pot, broken	3D
103	40	Hearth?	Ash pit or possible hearth with bones	5C
104	40	Stratum-Natural	Flint cobble bar or pile	5B
105	20	Post mold-mud	Post moldings	3D
106	16	Post mold-mud	Possible post moldings	3D
107	31	Tomb-possible-later	Possible tomb	1L
108	44	Stratum-cultural	Ash laden sands, medium texture 10 YR 7/1 to 10 YR	5A, 5B, 5C
109	31	Hearth?	Charcoal / ash concentration	1B
110	44	Hearth	Charcoal / ash concentration	5B
111	45	Stratum-Natural	Stratum beneath Locus 2, the gebel surface	6A
112	16	Post mold-mud	Possible post mold/ pot stand, SE quad	3D
113	18	Post mold-mud	Possible post mold/ pot stand	3D
114	19	Post mold-mud	Possible post mold/ pot stand	3D
115	36	Basket fragments	Basket fragments	3D
116	19	Stain-organic	Wood and mud mass in wall	3D
117	20,36	Stratum-Natural(?)	Stratum underlying Locus 49	3E
118	46	Wall-mudbrick	Walls of Garstang's house	7A
119	46	Fill-room fill	Fill from northern room of Garstang's house	7A
120	46	Fill-room fill	Fill from southern room of Garstang's house	7A
121	46	Artifact Cluster-lithic-Garstang	Lithic cache in south room	7A
122	46	"Fill from ""floor"" in north room"	"Fill from ""floor"" in north room"	7A
123	46	"Fill from ""floor"" in south room"	"Fill from ""floor"" in south room"	7A
124	46	Artifact Cluster-	Pottery concentration from the NW corner	7A

Locus Number	Operations where present	Feature Type	Feature Description	Assigned to Habitation Phase(s)
		pottery-Garstang	of Garsta	
125	reserved			
126	reserved			
127	reserved			
128	reserved			
129	reserved			
130	23, 34	Ash and organic stain/concentration	Ash and organic stain/concentration	3C

APPENDIX B

REPRESENTATIVE CERAMIC SHAPE PROFILES

This appendix presents representative profiles for the various vessel forms recovered at el-Mahâsna. Naturally, not all recorded profiles are presented, but rather a representative sample intended to demonstrate the typical shape and diameter of each Subjective Shape class. The following figures show the reconstructed interior (right) and exterior (left) shape of the vessel. Figures are keyed with the subjective shape class code given at the top center of each profile, the Petrie class letter designation apperring to the right, and the Habitation Phase of origin below the Petrie class.

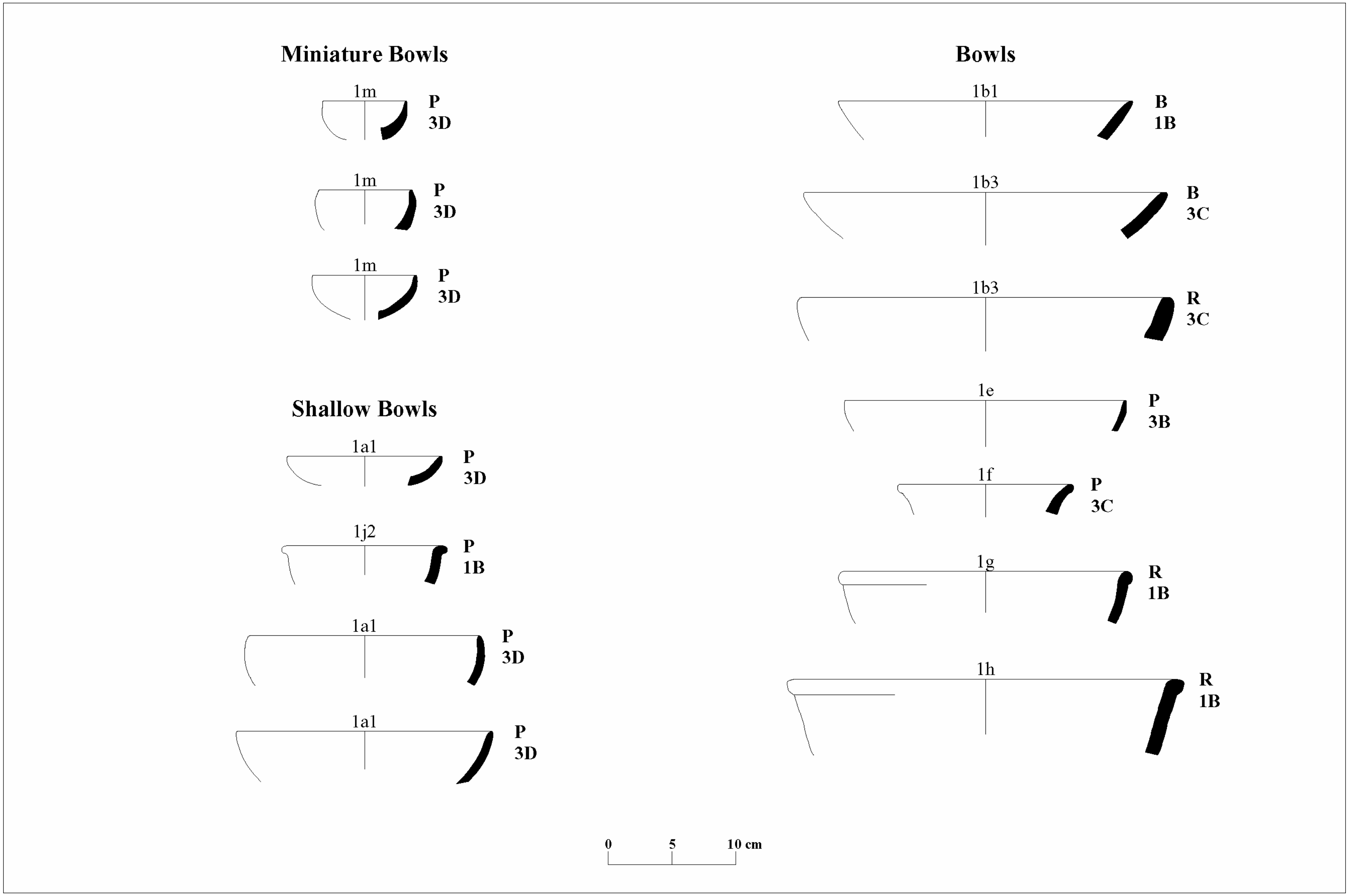

Figure B.1: **Representative profiles of miniature bowls, shallow bowls, and bowls.**

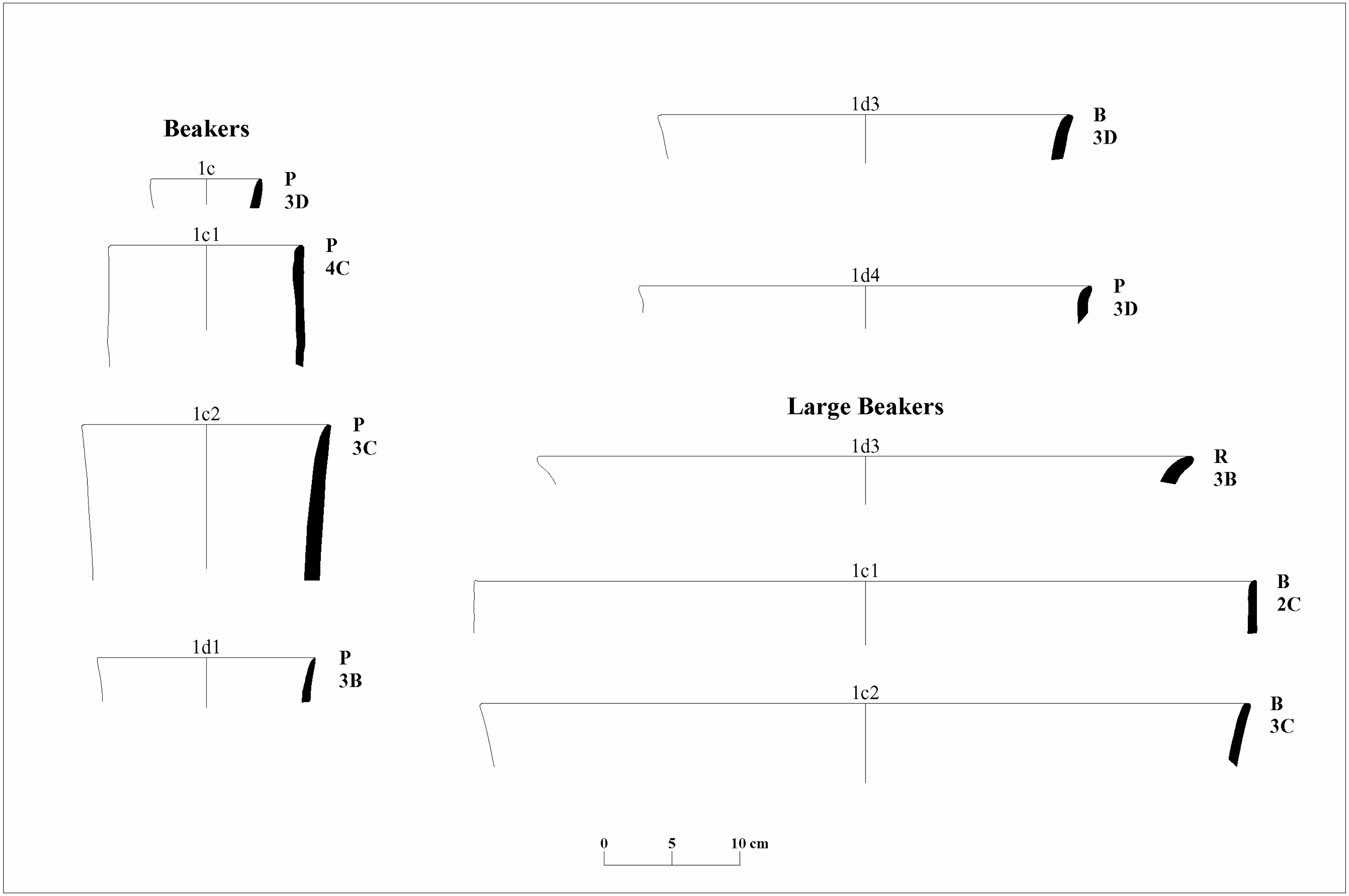

Figure B.2: **Representative profiles of beakers and large beakers.**

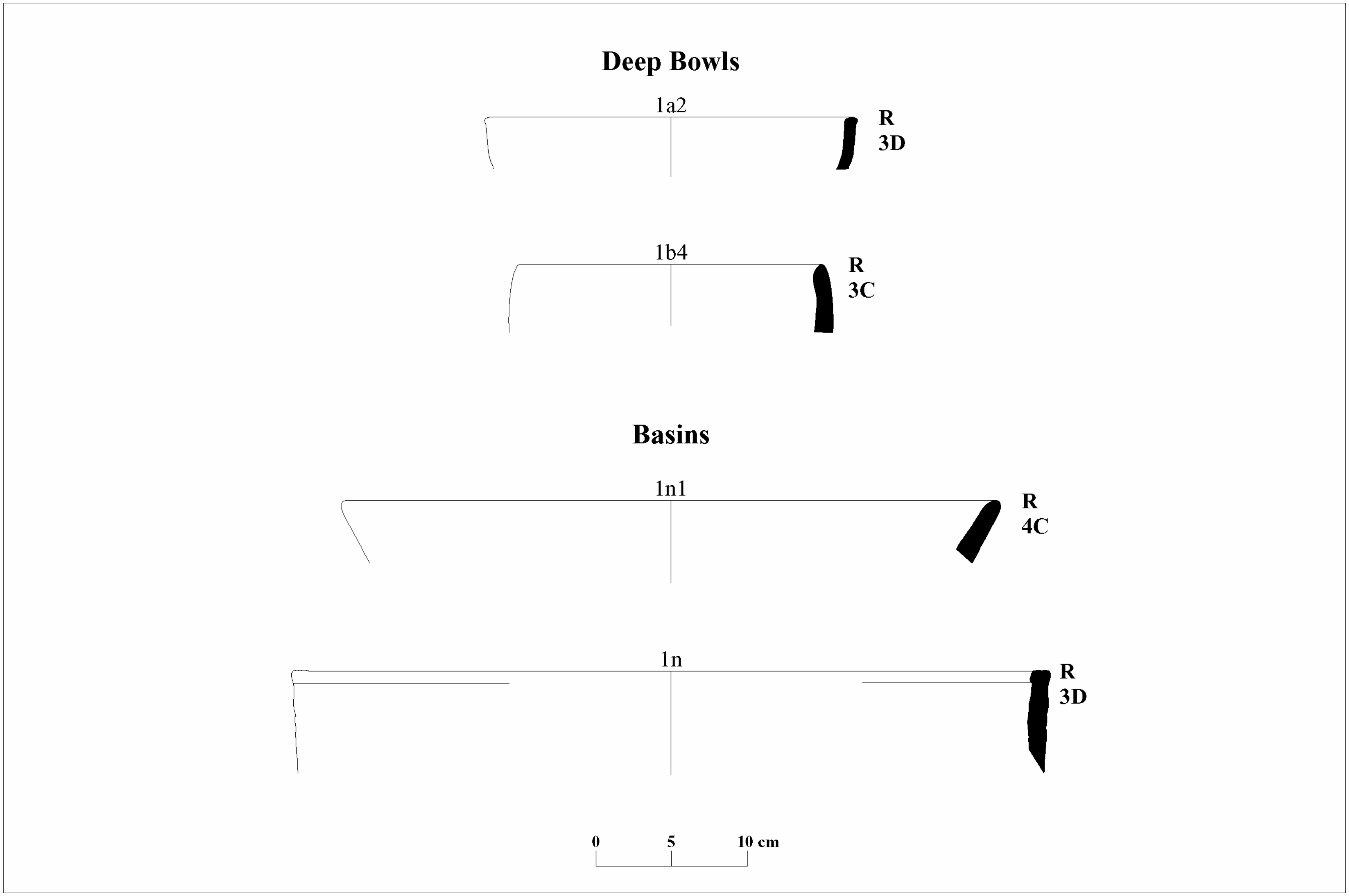

Figure B.3: **Representative profiles of deep bowls and basins.**

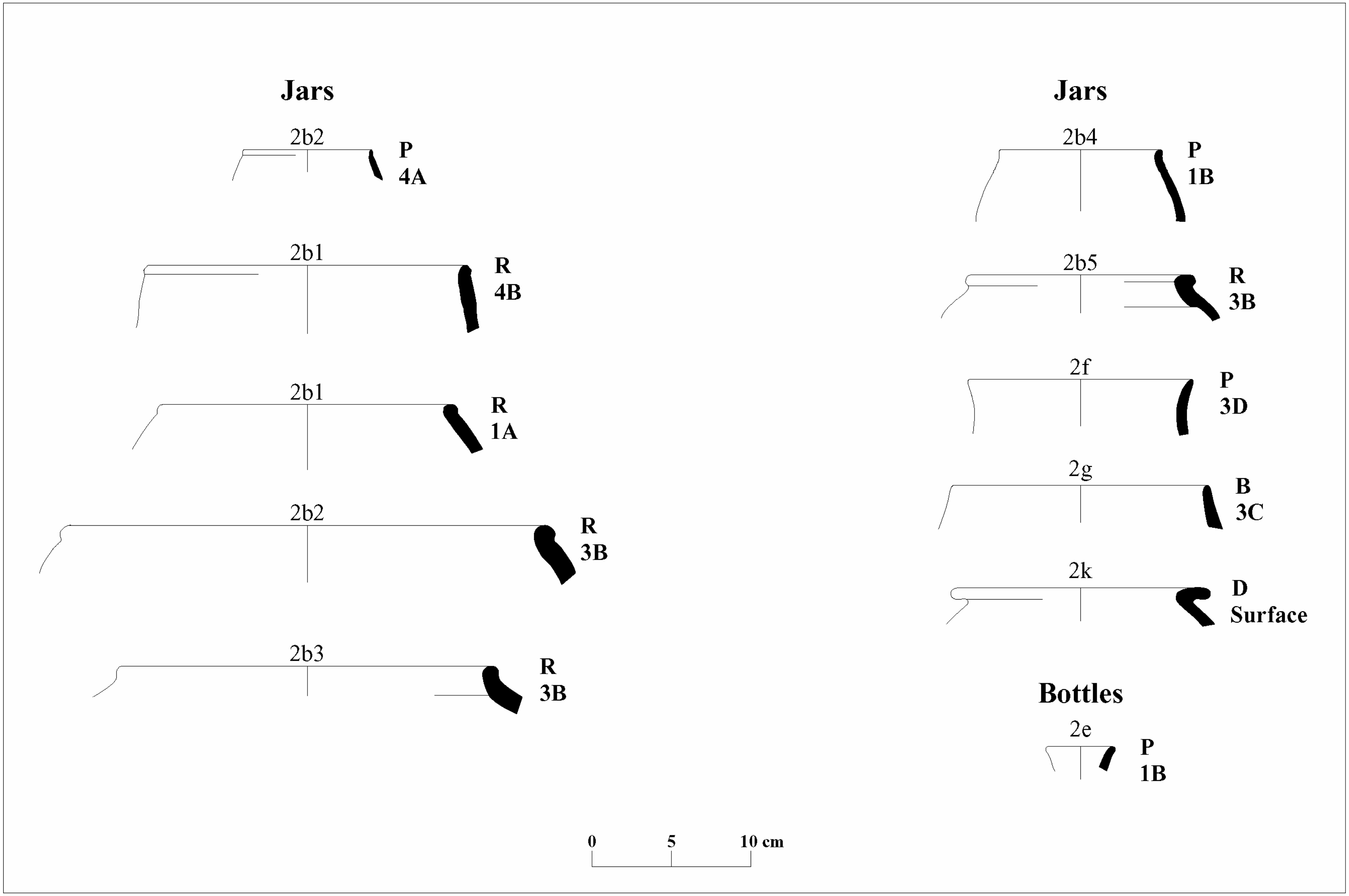

Figure B.4: **Representative profiles of jars and bottles.**

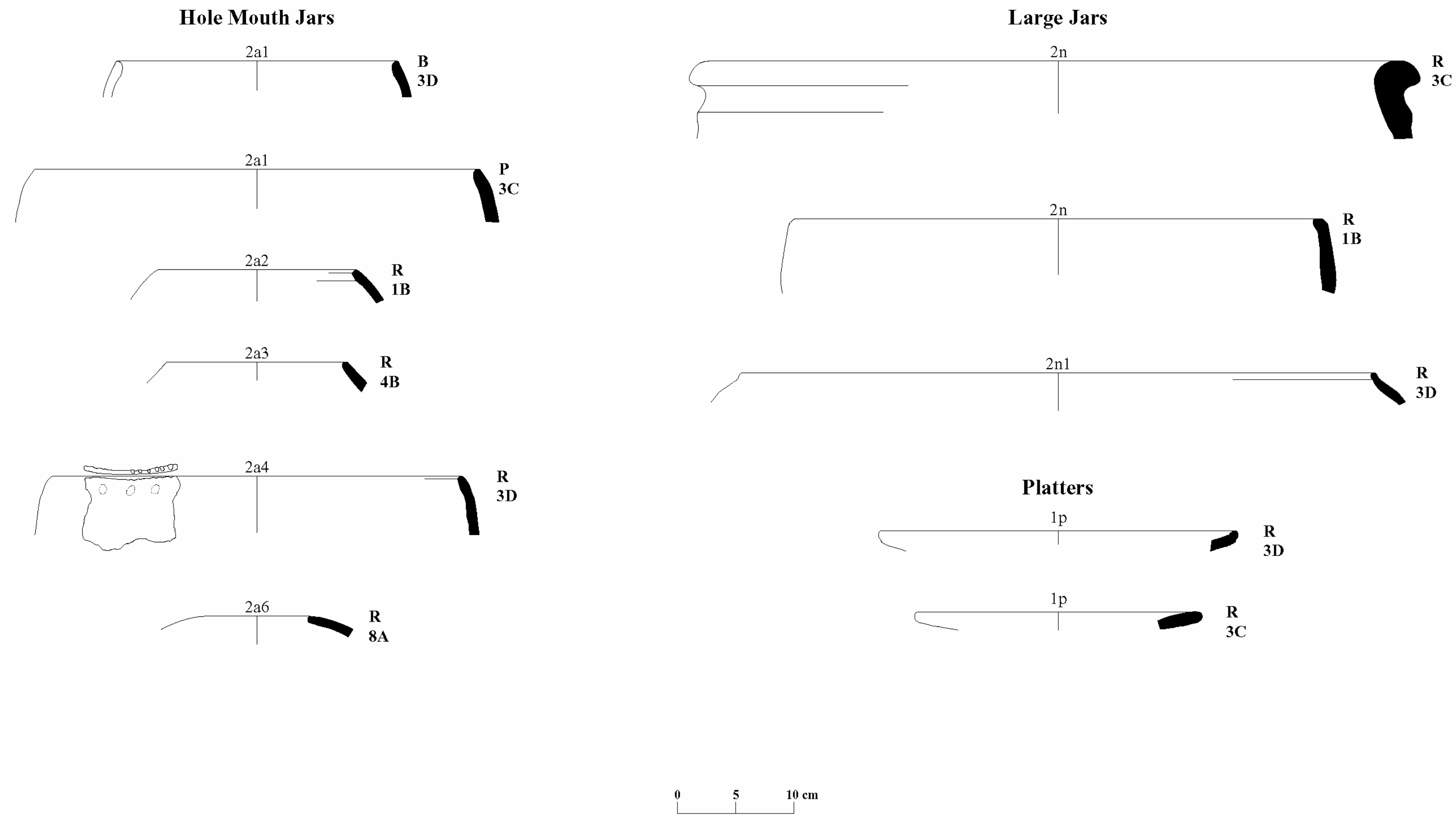

Figure B.5: Representative profiles of hole mouth jars, large jars, and platters.

APPENDIX C

KEY TO BODY PART CATEGORIES BASED ON SKELETAL ELEMENTS

Table C.1: Key to skeletal element assignments to body part categories

Body Part Category	Body Part Sub-Category	Skeletal Elements Included
Forelimb	Upper Forelimb	humerus radial carpal radius scapula ulna ulnar carpal
	Lower Forelimb	anterior phalanx 1 anterior phalanx 2 carpal IV carpal_ rad + interm. intermediate carpal metacarpal metacarpal III metacarpal III+IV metacarpal IV
Hind Limb	Upper Hind limb	femur patella tibia
	Lower Hind Limb	astragalus calcaneum central tarsal +IV first phalanx_ posterior metapodial III+IV metatarsal II metatarsal III metatarsal III+IV metatarsal IV metatarsal V posterior phalanx second phalanx_ posterior
Neck		atlas axis cervical vertebra
Rib Cage		rib sternum
Lower Spine		lumbar vertebra

Body Part Category	Body Part Sub-Category	Skeletal Elements Included
Pelvic Girdle		ilium ilium+ischium ischium ischium+pubis+ilium pelvis pubis sacrum
Skull		basisphenoid cranial dental fragment dental fragment_ lower dental fragment_ upper frontal horncore lateral malleolus mandible w/ dentition mandible w/t dentition maxilla w/ dentition maxilla w/t dentition nasal occipital parietal petrosal premax w/ dentition premax w/t dentition temporal zygomatic
Not Specifically Assigned		distal sesamoid first phalanx metapodial miscellaneous fragment proximal sesamoid second phalanx third phalanx

APPENDIX D

CATALOGUE OF ANTHROPOMORPHIC FIGURINES

The anthropomorphic figurines from el-Mahâsna have been previously described and detailed in Anderson (2002b). What follows in this appendix are revised and updated versions of the detailed catalogue entries prepared for that work.

Figurine Corpus Number: Mah.IV.1

Context: Operation 35, Locus 49, Lot 1.

Excavation Number and Present whereabouts: MAP 2558, stored at the University of Pennsylvania-Yale University-Institute of Fine Arts, New York University Expedition to Abydos expedition house in Abydos, Egypt.

Material and Technique of manufacture: Unbaked, untempered Nile Silt clay. Figure was manufactured in at least two parts; left leg, and right leg and waist. These sections were joined without scoring joining surfaces and thus contributed to the figuring "splitting apart" between the legs just after excavation.

Description: Small seated figure of a female individual with missing upper body. Each leg and buttock was formed separately, with the waist and upper pelvic areas having been formed along with the right leg. The buttocks are clearly defined as each was formed separately as part of the leg and then joined together.

Description of painted or incised decoration: The upper, outer thigh of the right leg has two distinct tattoo patterns indicted by incisions made in the clay while in a leather-hard state (see Figure 6.46 above). The first (lower on the leg) consists of a zigzag pattern indicated similar to the hieroglyphic determinative for water or alphabetic sign letter *n* (Gardiner 1978; sign N35). The upper tattoo consists of a pattern of shallow incised dots or punctates which may indicate seeds of grain. The pubic triangle area is indicated by three incised lines which have traces of either pigment or lighter colored clay having been pressed into the incisions.

Measurements as follows:

Height: 2.6 cm (as preserved)

Width at shoulders: n/a

Width at waist: 1.1 cm

Width at hips: 2.6 cm

Depth from front to back: 4.5 cm

Relative Date: Habitation Phase 3B; Naqada IIa-c.

Comments: In form and manufacturing technique this figurine is very similar to a fragmentary figurine recovered from grave 2028 at Naga el-Mashayikh, now in the collections of the Boston Museum of Fine Arts (BMFA 12.1188; MFA, Boston 2006) It is also very similar to Ucko's Figurine 42 (1968: fig. 32 and pl. X) recovered from Tomb 1687 at Naqada and now in the Ashmolean Museum. This figure dates to the late Naqada I/early Naqada II period and is also decorated with a zigzag pattern, although in paint on the upper left leg.

Figurine Corpus Number: Mah.IV.2

Context: Right Leg: OP 16, Locus 95, Lot 1; Left Leg: OP 19, Locus 49, Lot 5; and Torso: OP19, Locus 49, Lot 5

Excavation Number and Present whereabouts: MAP 2920-left leg; MAP 2923-torso; MAP 3046- right leg. Stored at the University of Pennsylvania-Yale University-Institute of Fine Arts, New York University Expedition to Abydos expedition house in Abydos, Egypt.

Material and Technique of manufacture: Unbaked, untempered Nile Silt clay. Figure was manufactured in at least three parts; left leg, right leg, and torso. In all three cases, these sections were joined without scoring the joining surfaces and thus contributed to the figurine "splitting" between the legs and at the waist.

Description: Seated figure of a female reconstructed from four fragments found in close proximity to one another. Head, upper left thigh and buttock are missing. The figure is steeply reclined forming an angle of approximately 130 degrees. Each leg/buttock was formed separately, with the waist/upper torso having been formed as a separate piece and attached to the legs following their joining. The buttocks are clearly defined as each was formed separately as part of the leg and were then joined together. The breasts were each formed separately and then attached to the chest area. These joins were then smoothed and made to appear as a single entity with the torso, with the exception of the right side of the left breast where the join in still visible. While the breasts show evidence of prehistoric damage and wear, they appear to have originally been slightly pendulous in form, perhaps similar to Mah.IV.5. Arms are indicated by arm stubs. See Figure 6.47.

Description of painted or incised decoration: No decoration is present.

Measurements as follows:

Height: 9.7 cm (as preserved)

Width at shoulders: 4.8 cm

Width at waist: 2.5 cm

Width at hips: 4.3 cm

Depth from front to back: : legs: 9.6 cm; overall figure: 13.2 cm

Relative Date: Habitation Phase 3D; Naqada Ic-IIab.

Comments: The lower body of this figurine is very similar to a fragmentary figurine recovered from grave 2028 at Naga el-Mashayikh, now in the collections of the Boston Museum of Fine Arts (BMFA 12.1188; MFA, Boston 2006) The upper body is very similar to Ucko's Figurines 71 and 72 in the stylistic depiction of the arms and form of the breasts (Ucko 1968: figures 45 & 46). Both of these figures were recovered from Tomb 186 at Ma'amerieh and are now in the collections of the Brooklyn Museum.

Figurine Corpus Number: Mah.IV.3

Context: OP 20, Locus 49, Lot 6

Excavation Number and Present whereabouts: MAP2934. Stored at the University of Pennsylvania-Yale University-Institute of Fine Arts, New York University Expedition to Abydos expedition house in Abydos, Egypt.

Material and Technique of manufacture: Baked clay.

Description: Fragment of a figurine(?) made of baked clay. The entire fragment has been painted in red pigment. On one face, a white ground has been painted over the red pigment. Upon this white ground additional decoration has been indicated with black pigment. In addition to the painted decoration, the figurine has been pierced, front-to-back by two holes, the purpose of which is unknown. Given the fragmentary nature of the piece, it is unclear what portion of a figurine is represented by the fragment.

Measurements as follows:

Length: 3.1 cm (as preserved)

Width: 2.4 cm

Thickness: 1.6 cm

Relative Date: Habitation Phase3D; Naqada Ic-IIab

Comments:

Figure D.1 Front (left) and back (right) views of Figurine Mah.IV.3.

Figurine Corpus Number: Mah.IV.4

Context: OP18, Locus 49, Lot 7

Excavation Number and Present whereabouts: MAP3019. Stored at the University of Pennsylvania-Yale University-Institute of Fine Arts, New York University Expedition to Abydos expedition house in Abydos, Egypt.

Material and Technique of manufacture: Unbaked, untempered Nile Silt clay.

Description: Fragment of a seated female of unbaked clay. The fragment is the right leg and buttock of a figure, which based on Mah.IV.1 and Mah.IV.2 described above, most likely depicts a female individual. The lower leg has been broken off and is missing. This leg appears to have been formed separately from the left and the area of the join was not scored prior to joining and may have accounted for its breaking off from the remainder of the figurine. See Figure 6.48.

Description of painted or incised decoration: No decoration present

Measurements as follows:

Height: 4.9 cm (as preserved)

Width at shoulders: n/a

Width at waist: 1.4 cm

Width at hips: n/a cm

Depth from front to back: 2.4 cm

Relative Date: Habitation Phase 3D; Naqada Ic-IIab.

Comments:

Figurine Corpus Number: Mah.IV.5

Context: OP 18, Locus 49, Lot 7

Excavation Number and Present whereabouts: MAP3020. Stored at the University of Pennsylvania-Yale University-Institute of Fine Arts, New York University Expedition to Abydos expedition house in Abydos, Egypt.

Material and Technique of manufacture: Unbaked, untempered Nile Silt clay.

Description: Upper torso of a female figure made of unbaked clay. This figure has been reconstructed from six fragments. Only the area from the base of the neck to just below the breasts is preserved The arms are represented by arm stubs. The breasts are present and were created separately and joined to the body of the figurine. They are pendulous and have not been damaged in antiquity. Given the portion of the figurine preserved, it is not possible to determine if the individual was standing or in a seated position. See Figure 6.49.

Description of painted or incised decoration: No decoration present

Measurements as follows:

Height: 4.8 cm (as preserved)

Width at shoulders: 5.7 cm

Width at waist: n/a

Width at hips: n/a

Depth from front to back: 2.2 cm

Relative Date: Habitation Phase3D; Naqada Ic-IIab.

Comments: In its stylistic depiction of the pendulous breasts, this figurine is very similar to a purchased figurine in the collections of the Metropolitan Museum of Art (MMA 07.228.71).

Figurine Corpus Number: Mah.IV.6

Context: OP16, Locus 49, Lot 7

Excavation Number and Present whereabouts: MAP3059. Stored at the University of Pennsylvania-Yale University-Institute of Fine Arts, New York University Expedition to Abydos expedition house in Abydos, Egypt.

Material and Technique of manufacture: Unbaked, untempered Nile Silt clay.

Description: This fragment represents the right leg and lower waist of a seated woman. It has been reconstructed from five smaller fragments and is very similar to the lower body of Mah.IV.2 and the preserved portion of Mah.IV.1. See Figure 6.48.

Description of painted or incised decoration: No decoration present

Measurements as follows:

Height: 2.97 cm

Width: 1.7 cm

Depth from front to back: 5.64 cm

Length: 5.32 cm

Relative Date: Habitation Phase3D; Naqada Ic-IIab.

Comments:

Figurine Corpus Number: Mah.IV.7

Context: OP20, Locus 49, Lot 5

Excavation Number and Present whereabouts: MAP3332. Stored at the University of Pennsylvania-Yale University-Institute of Fine Arts, New York University Expedition to Abydos expedition house in Abydos, Egypt.

Material and Technique of manufacture: Unbaked, untempered Nile Silt clay.

Description: This figurine fragment is a small portion of the leg of a figurine, which based on construction techniques and form as preserved, most likely was a seated female like figurines Mah.IV.1, Mah.IV.2, and Mah.IV.6.

Description of painted or incised decoration: No decoration present

Measurements as follows:

not available

Relative Date: Habitation Phase3D; Naqada Ic-IIab.

Comments:

APPENDIX E

COPIES OF STANDARDIZED FORMS UTILIZED

This appendix presents copies of the standardized forms that were used during both excavation as well as some of the various analyses conducted. However, since the majority of the artifact analysis was conducted and recorded directly in digital format, the data forms for these analyses are not presented.

El-Mahâsna
Archaeological
Project

Season______________

LOCUS # ASSIGNMENT LOG

Supervisor:__________________________

			Check As Completed					
Locus #	Op #	Date Assigned	Opening Elevation	Closing Elevation	Plan View	Profile View	Excavated (Y/N)	Artifacts Recovered (Y/N)

El-Mahâsna Archaeological Project

Season______________
Op#: ________________

OPERATION SUMMARY FORM

Operation Number ____________________ Supervisor _________________________

Notebook and pages: ____

Location of SW Corner: N ______________ E __________________

Dimensions of Operation: ☐ 1 x 1 m ☐ 2 x 2 m ☐ 3 x 3 m ☐ 1 x 2 m

☐ Other _______ X ________ m

_______ N-S/E-W ________

Dates of Excavation: Start: ______________ End: _____________

Elevations: opening: NE_______ NW ________ SE ________ SW _______ C ________

closing : NE_______ NW ________ SE ________ SW _______ C ________

Nature of Surface: ☐ New Fields ☐ Plowed ☐ Gebel Surface

Disturbance Factors:

☐ Plowing ☐ Later Tombs ☐ Previous Excavations

☐ Looting ☐ Bioturbation ☐ Other: __________________

Loci Numbers Assigned: ________ ________ ________ ________ ________

________ ________ ________ ________ ________

Comments: ____

____

____

____

____

____

Plan View Drawings: YES / NO Profile Drawings: YES / NO

El-Mahâsna Archaeological Project

Season________________
Op#: ________________
Locus #: ______________

LOCUS SUMMARY FORM

Locus #: ________________ OP# ______________ Supervisor ____________________

Dates of Excavation: Starting: _______________ Ending: _______________________

Type of Locus:

☐ Plowzone	☐ Recent fill	☐ Stratum (natural / cultural)	☐ Hearth
☐ Postmold	☐ Post	☐ Mudlined pit	☐ Living surface
☐ Waddle-and-Daub	☐ Mudbrick wall	☐ Vessel	☐ Artifact Cluster
☐ Tomb Depression	☐ Burial	☐ Cache	☐ Midden
☐ Bioturbation	☐ Former Excavation	☐ Other: ________________	

Nature of Matrix:

Texture: ________________________________ Color: ________________________________

Origin: ____

Excavation Information:

Max Dimensions: ____________________________ cm X __________________________ cm

(circle one) N-S / E-W / NW-SE / SW-NE N-S / E-W / NW-SE / SW-NE

Elevations: opening: NE_______ NW ________ SE ________ SW _______ C ________

closing : NE_______ NW ________ SE ________ SW _______ C ________

Max Depth: __________________ cm Average Depth: __________________ cm

Volume: ______________________ cm^3 % Screened: ______________________

Samples Taken:

☐ Flotation ☐ Carbon 14 ☐ Macro Debitage ☐ Other: ____________________

Artifacts Recovered:

☐ Lithics	☐ Ceramics	☐ Bone	☐ Shell
☐ Ivory	☐ Metal	☐ Organics	☐ Ground Stone
☐ Stone Vessel	☐ Small Object	☐ Ceramic Vessel	☐ Pallette
☐ Other: ________________		☐ Other: ________________	

MAP # Assigned: _________ _________ _________ _________ _________

___________ _________ _________ _________ _________ _________

Lot Numbers Assigned (if additional space is needed, use Additional Comments section on back)

Lot#	Definition	Lot#	Definition

Locus Summary Form (continued)

Season: ________________
OP#: ________________
Locus: ________________

Interpretation: ____

____
____
____
____
____
____
____

Sketch Horizontal Relationship to Other Loci

Sketch Stratigraphic Relationship to Other Loci

Additional Comments: ____

____
____

Photos:

B/W	______	______	______	______	______	______
Color	______	______	______	______	______	______
Digital	______	______	______	______	______	______

El-Mahâsna
Archaeological
Project

Season ______________
Op#: ______________
Locus #: ______________

LOT SUMMARY FORM

Locus #: ______________ OP# ______________ Supervisor ______________

Lot Number: ______________
Elevations: opening: NE ______ NW ______ SE ______ SW ______ C ______
closing : NE ______ NW ______ SE ______ SW ______ C ______
Description: ______________

Lot Number: ______________
Elevations: opening: NE ______ NW ______ SE ______ SW ______ C ______
closing : NE ______ NW ______ SE ______ SW ______ C ______
Description: ______________

Lot Number: ______________
Elevations: opening: NE ______ NW ______ SE ______ SW ______ C ______
closing : NE ______ NW ______ SE ______ SW ______ C ______
Description: ______________

Lot Number: ______________
Elevations: opening: NE ______ NW ______ SE ______ SW ______ C ______
closing : NE ______ NW ______ SE ______ SW ______ C ______
Description: ______________

El-Mahâsna Archaeological Project

Season: ____________

CERAMIC WARE CODE ANALYSIS SHEET

MAP#: ____________ OP: ____________

LOCUS: ____________ LOT: ____________

CODE	WS	RS	BS	Other

MAP#: ____________ OP: ____________

LOCUS: ____________ LOT: ____________

CODE	WS	RS	BS	Other

MAP#: ____________ OP: ____________

LOCUS: ____________ LOT: ____________

CODE	WS	RS	BS	Other

MAP#: ____________ OP: ____________

LOCUS: ____________ LOT: ____________

CODE	WS	RS	BS	Other

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