

MERSA/WADI GAWAIS 2009-2010

Kathryn A. Bard and Rodolfo Fattovich

with contributions by

Duncan FitzGerald, Rainer Gerisch, Christopher Hein, Dixie Ledesma, Andrea Manzo, Tracy Spurrier, Sally Wallace-Jones, Cheryl Ward and Chiara Zazzaro

Introduction

In December 2009-January 2010 the Archaeological Expedition of the Università degli Studi di Napoli “L’Orientale” (UNO), and Istituto Italiano per l’Africa e l’Oriente (IsIAO), Rome, in collaboration with Boston University (BU), Boston (USA) conducted the ninth field season at the site of Mersa/Wadi Gawasis, Red Sea, under the direction of Prof. Rodolfo Fattovich (UNO/IsIAO), and Prof. Kathryn A. Bard (BU). The team in the field included Italian, American, Egyptian, British, and German personnel with different specializations (archaeology, nautical archaeology, epigraphy, geology, paleoethnobotany and topography). Mr. Abdel Ghafar Abdelmoneim Mohamed represented the Supreme Council of Antiquities in the field, and greatly supported the work.

The site of Mersa/Wadi Gawasis is located 23 km to the south of the modern port of Safaga, on the top and along the slopes of a fossil coral terrace, to the west of which is the lower Wadi Gawasis. Earlier excavations along the western slope of the terrace provided good evidence of the use of Mersa Gawasis as the pharaonic harbor for voyages to Punt in the Middle Kingdom and the early New Kingdom.

In 2009-2010 fieldwork at Mersa/Wadi Gawasis included geological and archaeological investigations, mapping, laser-scanner surveying and conservation. Geological investigations were conducted in the wadi bed and confirmed the hypothesis that the lower Wadi Gawasis was originally a lagoon with an open channel to the sea. Archaeological excavations were conducted along and at the base of the western slope of the coral terrace and

in the “harbor area” at the base of the southwestern slope of the terrace (Fig. 1).

A man-made, rock-cut chamber (Cave 8), 5x4,8 m in area, was found at northern end of the slope of the western terrace which contains cultural material. An inscribed stela recording an expedition to Punt in Year 2 of the reign of Senusret II was found outside the entry of the chamber. The ceramics associated with this chamber and an outside living floor date to the early-mid 12th Dynasty. At the base of the slope a dump area with ceramics dating to the 12th Dynasty and evidence of a Middle Kingdom activity area were recorded. In the harbor area only scattered 12th Dynasty potsherds were found, as well as some evidence of a burnt ship timber plank. One test pit was also excavated inside Cave 2, which was discovered in 2004/2005, and confirmed that this cave was used as a workshop for cleaning timber.

Two huge blades of ship-rudder, ca. 4 m long, were also recorded at the entrance of Cave 6, which was discovered in 2006-2007.

Systematic mapping of the western wall of the coral terrace and Cave 8 was conducted with a laser scanner in order to generate a 3-D model of the area.

Conservation of several excavated ship timbers was implemented.

Coastal Geology (*C. Hein and D. FitzGerald*)

Previous geological field studies at Mersa/Wadi Gawais in 2006-2007 and 2008 (FitzGerald and Hein, 2008) demonstrated:

- 1) a bay once existed in the area presently occupied by Wadi Gawais; the occupation site is located south of the coralline cliffs containing the man-made caves, along the margin of the paleo-bay;
- 2) a coralline/beach rock surface was mapped within the wadi sediments along the cliffs. This surface roughly parallels the cliff front and thins in a southerly direction;
- 3) lagoonal sediments extended at least 6 m below present mean sea level;
- 4) the present wadi sediments are underlain by a very fine silty-sand containing both shell fragments and foraminiferal species associated with a brackish, warm to temperate shallow water, protected lagoon;

- 5) a wave-cut notch and erosional terraces carved into Pleistocene coral bedrock at the modern mouth of the small embayment at Wadi Gawasis are located 1,5 m above modern mean sea level and are evidence of a possible higher stand of sea level in the past. This higher-than-present stand of sea level would provide for a lagoon deep enough at the time of occupation for the ancient Egyptian vessels to safely navigate.

Quseir al Qadim, a filled sabka similar to Wadi Gawasis, provides a comparison site in terms of stratigraphy, sedimentology, and infilling history, though its archaeological history is of a much later period. This site does, however, support the idea that a Red Sea mid-Holocene highstand was wide-spread and the subsequent fall in sea level in combination with wadi sediment delivery were the driving forces behind the closure of these paleo-harbors.

Coastal geological studies were conducted at the Mersa/Wadi Gawasis archaeological site from 29 December 2009 to 14 January 2010. The purpose of this work was to address several questions:

- 1) what were the maximum dimensions of the paleo-lagoon?
- 2) What was the maximum depth of the paleo-lagoon?
- 3) What were the dimensions of the entrance channel? Was it wide and deep enough to permit access from the Red Sea to the harbor at the time of occupation?
- 4) Is there firm evidence of a mid-Holocene (~6 ka BP) highstand of sea level at Wadi Gawasis?

Topographic and geomorphic surveys of wave-cut notches and erosional terraces along the coast and entrance to Wadi Gawasis were performed to further elucidate the possibility and nature of a mid-Holocene sea-level highstand that would have created a deeper lagoon at Mersa/Wadi Gawasis. Total station surveys (17 points; S. Tilia per. com.), calibrated to tide charts, have confirmed these erosional features approximately 1 m above present MSL, at the same level as found in published literature for the mid-Holocene in the Red Sea. Stratigraphic evidence from the wadi itself also suggests a higher than present sea level at the time of occupation. Finally, in cooperation with Dr. Glenn Milne of the University of Ottawa (Ottawa, ON, Canada), coupled ice/earth (viscosity) rheological models

were run for the site of Mersa/Wadi Gawasis to produce a modeled sea-level curve calibrated both to observational data along the Red Sea Coast (Plaziat et alii, 1995). This modeling effort produced sea-level curves for the region that contained a highstand of sea level between 0,5 and 1,25 m above present MSL, at approximately 5 ky BP (G. Milne, per com.).

During the 2009-2010 field season, 44 auger cores were collected throughout the study area; these complemented cores from previous years for a total of 83 auger and pulse auger cores comprising 21 predetermined transects across the wadi. Cores ranged in depths from 3-6. m. A transect of auger cores across the hypothesized opening to the paleo-bay served to supplement deep wash borings across that same channel. A series of four deep (7-16 m) cores (wash borings) were collected throughout the study area to determine:

- 1) the maximum dimensions and nature of the opening to the paleo-bay;
- 2) the maximum depth of the paleo-bay. All cores were stratigraphically logged on site, topographically surveyed (S. Tilia per. com.), and their elevations adjusted to present MSL; these data were used to construct a detailed stratigraphic history of Mersa/Wadi Gawasis over the past 8,000 years.

The paleo-bay at Mersa/Wadi Gawasis existed concurrent with the occupation of the site; the maximum possible area of this bay is approximately 450,000 sq m. The channel connecting the bay to the Red Sea was narrow and deep, with a maximum cross-sectional area of 1,300 sq m.

The paleo-bay closed as a result of two processes: falling sea level and wadi infilling. The mid-Holocene higher stand of sea level in the Red Sea would not only have provided for a deeper bay to be used as a harbor, but would have extended the boundaries of the paleo-bay, covering a considerable more area than had sea level been 1-2 m lower than present at that time. Conversely, falling sea levels between 5,000 yrs BP and 2,000 yrs BP were directly responsible for the contraction and eventual closure of the paleo-bay at Mersa/Wadi Gawasis. However, various lines of evidence suggest that sediment delivery from nearby wadi systems was the dominant factor in the closure of the paleo-bay. Two core transects collected from the

central region of the paleo-bay out toward the wadi-ward extremities demonstrate that wadi and lagoonal sediments coarsen landward; lagoonal sediments are more often interspersed with wadi sediments in a landward direction; and wadi sequences thicken up-wadi from < 1 m near the center of the paleo-bay to > 2,5 m in the most distal cores. This indicates a dominance of sediment input in the evolution of this paleo-bay; even during sea-level rise, wadi inputs dominated the system and drove a shoreline regression.

Paleo-climatic records can be used to explain these trends. The enhanced precipitation patterns of the mid-Holocene African Humid Period would have delivered significantly more rainfall to the Wadi Gawasis watershed, thereby creating more frequent and larger flood events. These events, evidenced in the fining upward sequences of the wadi facies, delivered large quantities of sediment to the paleo-bay. Though some of this sediment was delivered directly into the bay to create the lagoonal facies, the coarser sediments were reworked along shore by the action of the fetch-limited waves of the paleo-bay. These sediments formed the shoreface and upper lagoonal sequences. Protected regions with limited wadi inputs received only the finest sediments, allowing for the formation of mangrove-rich tidal flats. Over time the paleo-bay closed due to the eustatic fall in sea level combined with wadi sediment input; however, simultaneous, the climate was becoming more arid, reducing the wadi sediment source, resulting in a thinning wadi sequence in a seaward direction. These combined forcings eventually closed the paleo-bay, leaving only the small embayment found today at Mersa/Wadi Gawasis.

Archaeology (K.A. Bard, R. Fattovich, D. Ledesma, A. Manzo, T. Spurrier, C. Ward, C. Zazzaro)

1. Western slope of the coral terrace

Two units (WG 61, WG 65) were opened by K. A. Bard and Tracy Spurrier and a rock-cut chamber (WG 67/Cave 8) was discovered to the northwest of Cave 1 (Fig. 2). Mohamed Abd el-Maguid, Chiara Zazzaro, and Cheryl Ward excavated and examined new ship components and

debitage from ship breaking and re-evaluated timbers excavated in earlier seasons as they were processed for storage.

Major discoveries were:

- 1) a man-made, rock-cut chamber (Cave 8);
- 2) a deposit of large ship timbers outside the entrance to a gallery-cave (Cave 6) and the identification of similar sized features on a segment of a ship's plank in Cave 3. In addition, two cedar hull planks (T80 and T93), three cedar deck planks (T82, T84, T94), and five small boat planks (T81, T83, T86, T95, T97) were recorded along with timbers in WG 32 (the ship timber deposit) and debitage, including oar fragments, in WG 64 (W960-W964).

WG 61 and WG 65 (*T. Spurrier*)

WG 61/65 is located on the western slope of the coral terrace northwest of Cave 1. This area was chosen in order to locate an additional cave. In previous seasons, potsherds and lithic debris were observed scattered on the slope south of this area, indicative of occupation. There was also an unnatural flat terrace in the middle of the slope. WG 61 and WG 65 were oriented along a north-south axis and each consisted of a 10x10 m trench, which was divided into 25,2x2 sq m. During the excavation of this area, Cave 8 was located and investigated. Outside the cave, there was a mud-brick structure, which apparently dates to a later occupation of the area. There were also a mud-brick threshold and anchors used as wall supports, possibly from the original sealing of the entrance to Cave 8, which contained only potsherds. Throughout all stratigraphic layers, there were many fire-pits and hearths, indicating multiple periods of use. A large, well preserved stela was discovered face down in a stratum of colluvium.

Many clay sealings and a scarab stamp seal, as well as a stool leg, ostraca and papyri were found in WG 61/65. These artifacts indicate that administrative activity occurred in this area. The abundance of pottery, which dates primarily to the early Middle Kingdom, represents a mixed corpus, with many domestic vessels such as bread molds, cooking pots and platters. In WG 61, an area of burnt mud-brick structures, one of which was filled with thousands of burnt barley seeds, was uncovered. These will be further investigated in a future field season. Overall, WG 61/65 represents a diverse mix of activities and different periods of use in the 12th Dynasty.

WG 67/Cave 8 (*A. Manzo*)

Cave 8 is a rectangular rock-cut chamber, ca. 5x6 m in area and up to 1,7 m high, with a horizontal floor and a curved, vaulted ceiling. The chamber is oriented along a southwest - northeast axis, with an entrance, 0,8 m wide, to the southwest. The chamber is delimited to the southwest by a wall of sandstone blocks. Some of these blocks may have been anchors or parts of anchors.

The deposit inside the cave (SU31), 20-40 cm thick, consisted of soft eolian sand and was almost sterile. A few potsherds were collected, mainly close to the cave walls. They included fragments of an atypical brownish-gray handled pitcher along the western side and in the northwestern corner of the cave. A fragment of ostrich eggshell was also found.

WG 32 (*C. Ward and C. Zazzaro*)

Excavation unit WG 32 was first opened south of the entrance to Cave 2 in 2005-2006. Investigations were resumed in a 6x12 m area of the excavation unit in 2006-2007. In 2007-2008 the excavation was aimed at better investigating the three different occupation phases, which were identified in 2006-2007 (Bard and Fattovich, 2007b, pp. 18-19). The latest occupation layer was characterized by very little archaeological material and represented a period of abandonment at the site during which windblown sand and leaves accumulated. This phase may date to the early New Kingdom, on the basis of an associated potsherd found in WG 53.

This (early New Kingdom?) level overlies an earlier level, which contained a complete hull plank (T34), inscribed stelae, clay sealings, about 40 complete or fragmentary wooden boxes dating to the reign of Amenemhat IV (ca. 1797-1790 BC), ceramics, and about 50 shallow (ration?) bowls (complete and fragmentary) (Bard and Fattovich, 2007, pp. 47-48). The entrance to a gallery-cave (Cave 6) was discovered in the fossil coral terrace, in the southern part of WG 32; it represents the earliest level in this area to date (see Bard and Fattovich, 2007, pp. 60-61). A plank (T34), 3,29 m long, was probably part of the timber deposit, as its tip was in the entrance of the gallery, and it was precisely aligned with the timbers below it.

During the 2007-2008 field season, several large ship timbers were identified beneath a layer of salt concretion (SU38) at the entrance to Cave 6, in association with two walls in squares B5 and C5 (Bard and Fattovich, 2008). They included the upper portion of a steering oar blade (T72) similar in form to blades T1 and T2 recovered from Cave 2 in 2004-2005 (Zazzaro, 2009, pp. 3-8). In 2009-2010, this area was re-investigated with the assistance of project conservator Howard Wellman. Excavation focused on a timber deposit beneath the salt encrustation (T86, T87, T88, T89, T90, T91, T92 and T93) and two steering oar blades (T72 and T85). The two steering oar blades are remarkable for their size, measuring ca. 3,25 m and 4,20 m in length. They had been reused to make a ramp to the gallery and lie parallel to one another at the bottom of the timber deposit. In addition to ship timbers, a few sherds and clay sealings were found along the south side of the deposit and near the gallery entrance. Ship components were recorded and consolidated, and most were left *in situ* for further conservation.

WG 64 (C. Ward and C. Zazzaro)

WG 64 is located within Cave 2 (Bard and Fattovich, 2007a, p. 61) and consisted of a 4x2 m trench, divided into 2x2 sq m. Cave 2 is 24 m long and ca. 4-5 m wide. It is divided into three sectors: the Entrance Corridor and Room 1 were excavated during the 2004-2005 and 2005-2006 field seasons; Room 2, surveyed in 2005-2006, is where WG 64 was opened during this field season. Previous excavations in the Entrance Corridor and Room 1 revealed two occupation phases indicated by ceramics, wood debitage and ship timbers incorporated as features in the entrance and gallery, and food production artifacts (Bard and Fattovich, 2007a, pp. 65).

Wood debitage was mixed in a compact sandy layer (SU2), ca. 10-20 cm thick, and consisted of thin splinters, small wood pieces, measuring 2-5 cm long, and larger pieces, 10-15 cm long. Approximately 47 liters of wood debitage were recovered from WG 64, and included cedar-type debitage with shipworm damage and a few fragments with insect damage, acacia-type fastener fragments (tenons), *Ficus sycomore*-type fragments, and box fragments. The condition of the debitage was, in general, good, but most surfaces were moist and soft, lacking detail due to degradation.

The wood debitage is most likely the result of dismantling, cleaning and modification of ship timbers. Only a few fragments retained adze marks

and less than 10 fragments displayed the red paint marks that are associated with cleaning activities. The debitage is consistent with the type of wood debitage excavated in the Entrance Corridor of this gallery in 2005-2006 (Ward and Zazzaro, 2010, pp. 30-31), and differs from wood debitage collected in the contiguous gallery, Cave 3, in which many more fastener fragments of larger size and different types, including dovetail tenons, were recorded.

Several segments of broken oar looms and blades were excavated in WG 64. A tool handle for an adze (W962) discovered beside a collapsed block on the north side of the trench, was fashioned from a local mangrove-type wood and a shipworm-damaged cedar fragment. The handle was found in association with two Type 4 fragments of rope (the thicker type of rope found at the site). Barley seeds, insects and a few potsherds were also found in WG 64, especially along the southern limit of the trench.

2. Base of the western slope of the terrace

Two excavation units (WG 69, WG 70) were opened at the base of the western slope of the terrace, to the west and north of the activity area excavated in 2003-2004 to 2006-2007.

WG 69 (*K.A. Bard, R. Fattovich*)

This excavation unit was opened at the base of the western slope of the terrace, below Cave 8, and included the geological pit T10A, where many fragments of pottery were recorded.

The stratigraphic sequence consisted of:

- 1) a superficial, sterile stratum of lagoon sediment (SU1), ca. 15-20 cm thick, with evidence of potsherds at the base;
- 2) a sterile stratum of compact clay (SU2), ca. 0,15-0,2 m thick, with evidence of ceramics at the base;
- 3) a stratum with a great quantity of large and small potsherds (dump) in a sand matrix (SU3) between strata SU2 and SU4;
- 4) a stratum of clay from the wadi (SU4) with large fragments of pottery;
- 5) a stratum of sand (SU5) with evidence of a dump with small potsherds and animal bones, and evidence of a lagoon shore with shells at the base (Fig. 3). On the whole, this sequence consisted of ca. 35 cm of wadi deposits since last Middle

Kingdom dump (ca. 1800 BC?); ca. 95 cm from the present wadi top to the ancient lagoon; and ca. 50 cm of wadi deposits from the dump deposit (SU4; ca. 2000 BC?) to the top of the wadi.

WG 70 (*R. Fattovich*)

This was a test pit, 4 m x 4 m in area, about 50 m to the northeast of WG 69, in an area where scattered fragments of ceramics together with pebbles and stone from the coral terrace were visible on the surface.

A number of hearths associated with large fragments of Middle Kingdom ceramics and ropes (SU2), beneath a stratum of windblown sand (SU1), ca. 40 cm thick, were recorded in this excavation trench. A large mud-brick feature with a concave bottom and traces of fire in the center (most likely a kiln) was also found in the northwestern corner of the trench within a matrix of windblown sand (SU3), and will be excavated in the next field season.

3. “Harbor area”

Three excavation trenches (WG 50, WG 63, WG 66) were opened at the base of the southwestern slope of the coral terrace.

WG 50 (*R. Fattovich*)

This excavation trench, 10x4 m in area, was excavated immediately to the east of WG 48/49 (excavated in 2007-2008) in order to test the possible extension of the camp area and a concentration of large jars, which were identified in 2007-2008, into the central area of the “harbor.” Only a few ceramics and a large, burnt ship timber were found in this trench.

WG 63-66 (*R. Fattovich and D. Ledesma*)

Excavation Units WG 63 and WG 66 were delimited in the western sector of the “harbor area,” between the southern slope of the coral terrace and the wadi bed to the south of WG 15 (excavated in 2003-2004) and WG 18 (excavated in 2003-2004).

WG 63 was a transect, 10x4 m in area. Only six squares of 2x2 m each were excavated and two stratigraphic units were recorded. The upper stratum (SU1) consisted of an almost sterile, light windblown sand

alternating with layers of gravel from recent wadi activity. Below a salt layer, ca. 30-50 cm thick, a stratum of dark, compact wet sand (SU2) was found. A greater quantity of pottery was found in the salt layer and SU2 than in SU1. SU2 contained numerous ceramic sherds, large storage jars and the remains of large animal bones, and several layers of pebbles were interspersed between the layers of large storage jars and bones (Fig. 4). The bones, most likely donkey remains, consisted of a variety of preserved skeletal elements including the upper and lower jaw and long bones. Excavations were suspended in SU2 due to the presence of red/orange spots, which are believed to be the residue of ancient mangrove roots, which occurred within the entire excavation unit.

WG 66 was a transect, 10x4 m in area, immediately to the south of WG 63. Finds included pottery, large storage jars, animal bones (donkey) and small pieces of copper from the lower stratum (SU2). The excavation continued down approximately 5-10 cm below SU2 and evidence of an ancient shore, with remains of ancient mangrove roots and small fragments of pottery, was found.

The ceramics from WG 63 and WG 66 date to the Middle Kingdom and included fragments of large storage jars.

The presence of large mammal bones in WG 63 and WG 66 suggest that the ancient Egyptians were using pack animals (donkeys) to carry the supplies needed from the Nile Valley. The large quantity of pottery, including the presence of large storage jars, would have been used in the transport of supplies such as cereals. The remains of large storage jars also indicates that the harbor area may have been where the ancient Egyptians were loading and unloading ships for expeditions to Punt.

Finds

Pottery (*S. Wallace-Jones*)

Ceramic material from all the main areas of excavation was examined during the field season. Dating across the site continues to be distinctively Middle Kingdom, with a definite bias toward the 12th Dynasty, especially in excavation units WG 61, WG 63, and WG 65 on the coral

terrace outside Cave 8. Across the wider site, material covers the 12th Dynasty with some evidence for continuation into the 13th.

WG 61/65 are very interesting from a ceramic point of view, having a rich assemblage of vessel types and fabrics which one would expect to find in the Nile Valley. The range of fabrics includes Nile A, B1 B2 and C fabrics, as well as Marl AV3 and Marl C. There is also a small quantity of Nile E cooker present and this always shows evidence of heavy smoking. Vessel types cover a full range of open and closed forms, including many fragments of medium and large storage jars. Whilst these are certainly present in the Marl C fabric, which occurs so commonly elsewhere at the site, a significant proportion of jar body sherds (up to 50%) are of Nile fabrics. There is also a small proportion of large storage jars on Marl AV3 fabric. Nile fabrics are also commonly represented by large flat profiled dishes with an everted lip and an average diameter of 30-40 cm. In the majority of cases the fabric is Nile B2, although some closed forms and fragments of larger open forms may be classified as Nile C. Both open and closed forms show evidence that red wash was present and also that rope or string was used as a support whilst vessels were drying. It is clear from their bag shaped profiles and thinner walls that some Marl C jars were smaller than the large storage jars identified at other areas of the site and these were almost certainly used as cooking pots, as they are often heavily smoked. There are also some thinner sherds of Marl C, which may be from open forms. In addition to the large dishes and jars a wide range of smaller vessels is also present; common amongst these are many fragments of B1 hemispherical cups and small Marl AV3 cups of similar size and form. Vessels used in food preparation and for storing and transporting liquids are common and these include fragments of Marl C cooking pots, and also Nile B2 material including large and small open forms and jars in a variety of sizes. Vessels for storing beer, water and wine are present in Nile B2 and Marl AV3 in a range of sizes and forms common to the Middle Kingdom. Small plates with an average diameter of about 17 cm are also commonly found. These are usually of Marl AV3 fabric with a wheel-turned rim and scraped base. There are also many fragments of similar sized plates up to 20 cm in diameter of Nile B2. Marl AV3 is less frequently represented than Marl C, but is used for some deeper bowls with wheel-turned rims and scraped bases. Sherds of many deep, basin-shaped vessels occur frequently in this area and were probably used in food preparation. They are much less

common in other areas of the site. They have a distinctive rounded, deep profile and molded rim; they are almost always of Nile B2 fabric, although some of the smaller ones are of a finer fabric almost like B1. There is evidence that the smaller vessels B1 were often red washed and burnished inside and out, whilst larger examples are uncoated or have traces of red wash inside and out without any burnishing. There is also a significant amount of bread molds from the area.

WG 63, WG 66 and WG 69 produced a wide range of ceramic material including a Marl C cooking pot from WG 63, SU2, D3, which has close parallels with 12th Dynasty material from other sites. A complete profile was preserved showing a bag-shaped jar with a scraped rounded bottom. This area is distinct from the coral terrace area, being much closer to the bed of the wadi and in an area associated with the harbor. In these areas the ceramics suggest a wide date range and illustrate a whole range of fabrics and vessel types from large, flat-bottomed Marl C *zirs* with a base diameter of more than 30 cm to many fragments of Nile B1 and B2 cups.

Other interesting pieces include some sherds of Canaanite amphorae, a piece of Minoan pottery from WG 55,C2, SU2 in the form of a very distinctive class of Minoan wheel-made pottery, dating to about 1,700 BC, and also a small amount of Marl AV3 material with incised decoration dating to the early-mid 12th Dynasty. Pottery from WG 67 inside the cave is also of Middle Kingdom date and contained one pot of unusual fabric and technology which remains to be identified positively but would appear to be non-Egyptian (Fig. 5).

Nubian pottery and ceramics from southern regions of the Red Sea (A. Manzo)

Twenty-one exotic potsherds of Nubian type and from the southern regions of the Red Sea were collected in the 2009-2010 field season.

The Nubian fragments included:

- 1) several fragments of a small reddish-brown closed bowl with a slightly everted rim, decorated with horizontal incised lines on the body and small impressions on the rim, from WG 61, D-E2, SU45; this type occurs frequently in Pan-grave cemeteries and C-Group domestic assemblages in

Lower Nubia, and was already recorded at Mersa/Wadi Gawais (Manzo 2007, 2010);

- 2) body-sherds of a dark brown or grey, open or slightly closed bowls with organic and mineral temper, decorated with bands of criss-cross incised lines over the upper part of the body, from WG 55, E3, SU4 and WG 66, D-E3, SU3. These vessels occur frequently in Middle Nubian assemblages, where they are often interpreted as cooking-pots, and were already recorded at Mersa/Wadi Gawais (Manzo 2007, 2010);
- 3) a fragment of rim from a grey bowl or cup with mineral inclusions and a smooth grey external surface with red spots and a wiped internal surface, decorated with horizontal, vertical, and oblique bands of parallel incisions delimiting undecorated sectors on the external surface and a band of crossing notches on the top of the lip, from WG 55, D3, SU2. This type is comparable to Pan-grave and C-Group II vessels (Säve-Söderbergh, 1989: 166-174, Pl. 20 PI a5 47/65:3, 261-262, Pl. 163, 4);
- 4) a fragment of a bottle with a grey to brown micaceous paste and mineral inclusions, polished grey external surface and smooth grey internal surface, from WG 68, SU1. This fragment is comparable to Middle Kerma or Classic Kerma types (Privati, 1999, p. 47, fig. 13, 7; Reisner, 1923, pp. 374-381, fig. 255-258);
- 5) several hand-made fragments, most likely ascribable to Nubian wares, but too small to be appropriately classified, from WG 31, SU1; WG 61, C2-3, SU49; WG 61-65, SU32; WG 61-65 SU45; WG 65 A/B2-3, SU2.

The fragments of pots from the regions of the southern Red Sea included:

- 1) a fragment with brown micaceous inclusions and smooth surfaces, from WG 65, A4-5, SU46. The external surface of this fragment is decorated with a band of parallel impressed lines, most likely made with the edge of a shell, and is similar to specimens from sites dated to the first half of the 2nd millennium BC in Djibouti (Gutherz, Joussaume, Amblard and Guedda Mohammed, 1996, pp. 273-279, fig. 9; Poisblaud, 2002, pp. 209-210, fig. 16, 2004-2005, p. 119) (Fig. 6);

- 2) three potsherds decorated with burnished lines typical of the Yemeni coastal region, but too small to be ascribed to specific types, from Hearth 3 in WG 33, SU3 (Buffa, 2007, pp. 34-35).

These pottery fragments confirm that Nubians participated in the pharaonic expeditions in the Red Sea. Some vessels, however, might have been produced by local groups living in the Eastern Desert with a material culture related to the Nubian one, or they may have arrived at the site from the Sudanese coast *via* the Red Sea.

The pottery fragments from the southern Red Sea region confirm that both sides of the Red Sea were involved in the Egypt-Punt network, and suggest that this network also included the coast of Djibouti.

Sealings and seal (A. Manzo)

In the 2009-2010 field season a previously unknown administrative area was discovered in front of Cave 8. If the area in front of Cave 6 was mainly related to the opening of the wooden boxes containing the products of Punt (Manzo and Pirelli, 2006), as was also confirmed by the finds there of the 2009-2010 field season, the sealings from the administrative area in front of Cave 8 were used to control the access to different types of containers.

A well preserved faïence scarab seal also excavated front of Cave 8, in WG 61, E4, SU45. The seal on the scarab has a pattern of scrolls with oblique symmetrical *nfr* signs, and can be generically dated to the Middle Kingdom (Fig. 7).

Clay sealings were found in WG 61/65, SU19, SU21, SU32, SU44, SU45, SU46; in WG 31, SU1; and in WG 32 near the ramp at the entrance of Cave 6.

Clay sealings with signs, such as *nb*, *nfr*, *anx*, *Dd* and *nbw*, were found in WG 61/65, SU45, SU46, and in WG 32, SU46. A few sealings showed only a complex pattern of scrolls. Clay sealings also included a few from WG 32, SU46 (entrance of Cave 6) and WG 61-65 SU46 with the impressions of the same seal with protective *wAD* and (possibly) *nfr* signs

forming a kind of cross; between the arms of the cross are four possible oblique *mi* signs.

A clay sealing with the complete impression of the name of the scribe Amenemhat, and other fragments with the same name, were found in WG 61/65, SU45, SU46.

A fragment with a seal impression recording *niwt rsy* (“the Southern Town”, i.e., Thebes), surrounded by a frieze of scrolls, was found in WG 32, SU46 (entrance of Cave 6). This sealing was also impressed with a smaller seal with scrolls and the *anx* sign. It was used to seal a wooden box. Another fragmentary sealing, possibly also used to seal a wooden box, with a frieze of scrolls, recorded the *imy-r pr hD [sn]wsrt*, “the overseer of the Treasury Senusret.” The *pr* sign (“house, palace”) as well as possibly the *niwt* sign (“city”) also occur on a fragment from WG 31, SU1.

Clay sealings with impression of two seals, suggesting a more complex administrative control, possibly dating to the second half of the 12th Dynasty, were collected in WG 32, SU46 (entrance of Cave 6) and in WG 61/65, SU46.

Impressions of pegs, wood and ropes on the back of the sealings suggest that some of them were used to close wooden boxes (WG 32, SU46; WG 61/65, SU19, SU46). Other sealings with the impression of a bag (WG 32, SU46; WG 61/65, SU45) or a basket (WG 61/65, SU46) were also found. Fragments of clay stoppers, with impressions of a straw disk to close jars, were collected in WG 61/65, SU32, SU45, SU46. Several sealings from WG 61/65, SU19, SU45, SU46 and WG 31, SU1 had impressions of papyrus on the back.

Fragments of chunks of raw, pure clay from WG 61/65, SU32 and SU44 suggest that containers were opened and sealed in that area.

The large number of sealings with traces of papyrus from the assemblage in front of Cave 8 (Fig. 8) also points to sealing letters in this area, and suggests that letters and despatches were regularly sent to and from Mersa/Gawasis when the Egyptian expeditions were staying at the site with a kind of regular delivery service similar to that between Egypt and the Nubian fortresses at this time.

Epigraphy (E. Mahfouz)

A stela, two fragments of papyrus and two ostraca were found during the 2009-2010 field season.

Stela WG 29

A sandstone stela, 72 cm long, 47 cm wide and 10 cm thick, was discovered in WG 61 (Fig. 9). The stela, with two incised registers, was in a relatively good state of preservation and some hieroglyphic signs still preserve the original color, including the disc of the winged sun at the top of the stela, which is red, and the *nb* sign of the title *nb tAwy* on the left side of the upper register, which is blue.

In the upper register, the royal names and epithets are incised under the winged sun disc with a uraeus at each side. The royal protocol includes in the middle the Horus name of the king Senusret II in a serekh surmounted with the falcon with the double crown. On the left hand part, The crown name and epithets “the good god Khâkheperrê, lord of the two lands, given life forever” (*nTr nfr #a- xpr-R a nb tAwy di anx*), are in two columns to the left of the serekh. The royal epithet, “*May he be given all life, the beloved of Min of Coptos,*” is in two columns on the right.

The second part of the stela is composed of six horizontal lines of hieroglyphic signs incised in a smaller size and written from right to left. The last part of the last line is damaged and there are some erased parts of the surface, especially in the beginning and end of every line as well as in the middle of some lines. Two separated signs (a house and a bird) were apparently added in at a later time below this text.

The stela provides important information about the herald Henenu at the site in Year 2 of Senusret II. This official not only had many honorific titles, such as hereditary prince, prince, king’s acquaintance, but he was also “*director of the Bia-Punt expedition.*” He was also associated with the royal palace by the title “*butler in the palace.*” Finally, the epithet, “*the one who prospects [literally, “sees”] the deserts,*” points to his function/position on the expedition.

PWG 02

A fragment of papyrus, 3,5 cm long and 7 cm wide, was found in WG 61, C2, SU21 (Fig. 10). The preserved text consists of three hieratic columns written in black ink: 1) ...mi +Hwtȳ... (...*like Thoth...*), 2) ...[DA]DAt m st n... (...*magistrates of the place...*), 3) ... anH wDA snb [nsw?]... (...*life, prosperity and health [king?]*...).

PWG 03

Fragments of papyrus from WG 61, D-E4, SU82 contained part of a column in hieratic written in black ink. Only *nb* sign could be read.

OWG 113

An ostrakon, 13 cm long, 7 cm wide and 1,5 cm thick, from WG 61, D-E 4, SU82 contains part of one hieratic column written in black ink on a white surface. The text records cleaned fish, which were imported from Thebes.

OWG 114

An ostrakon, 9,5 cm long, 5,5 cm wide and 1 cm thick, from WG 61, D-E2, SU23 consists of four incomplete, horizontal lines written in black ink on a red ware fragment. The inscription records the use of cleaned fish, in Year 6 of Senusret II.

Archaeobotany (*K. Borojevic*)

The analysis of plant macro-remains in 2009-2010 confirmed that the principle cereals were barley and emmer, as indicated in the reports from previous field seasons. Charred barley grains are found outside the caves in much larger quantities than emmer, e.g., from hearths in WG 33 and WG 65. The charring may represent accidents that happened during the heating of the grains, indicating that those cereals were processed outside the cave entrances. On the other hand, from the same units, e.g., WG 65, A2-3, SU 19, uncharred plant material was recovered, including hollow emmer spikelets and barley rachises. Numerous fiber plants, pieces of rope, and

linen fragments were found from the same excavation unit, in addition to several garlic rootlets. Such a diverse composition of charred and uncharred plants indicates different depositional histories. Cave 8, however, did not yield any plant material. From the cave entrance, some desiccated sea plants were found mixed with mangrove plants, indicating that they were likely blown in when the sea was much closer to the cave entrances.

The plant assemblage collected from excavation units WG 55/56 in the 2007-2008 field season is dominated by fruits, particularly by immature sycamore figs, and others types of fruits, including two doum palm fruits, one *Balanites* fruit, Nile acacia fruits, and mangrove fruits. Wood of Nile acacia was commonly found at the site as well as of *Avicennia marina*. One garlic base was also found in the same excavation unit. Particularly intriguing is the discovery of a yet unidentified capsule resembling a poppy capsule (but without internal divisions), and of three not yet identified seeds that await further analysis.

Charcoal and Wood Remains (*R. Gerisch*)

The identification of charcoal from the 2009-2010 excavation units at Mersa/Wadi Gawasis confirmed that the samples are heterogenous in character and dominated by wood of the Nile acacia (*Acacia nilotica*), grey mangrove (*Avicennia marina*) and cedar of Lebanon (*Cedrus libani*). They consist of a mixture of ship timbers and woods from the Red Sea region, and derived from domestic and industrial fire pits.

The results obtained from charcoal analysis suggest that the ancient environment of the site was different from today. The mangrove stands, which were typical for the landscape of the Red Sea coast, have disappeared, and in the wadi near the main excavation area only the salt tree (*Nitraria retusa*) occurs nowadays. In the past, *Avicennia marina* seems to have grown in greater stands in the shallow water along the shore. Layers of mangrove leaves were found in several excavation contexts (for example, 2006-2007: WG 32, WG 40, SU 3; 2007-2008: WG 33, SU 3, WG 53, SU 2, WG 54, SU1/SU2, WG 55, SU 6; 2009-2010: WG 61/65, SU 19; see previous reports) and the remains of roots in the “harbor area.”

The littoral salt marsh in the catchment area of the periodic inundation by tides could have contained the halophytic succulent *Suaeda*

monoica, sea blite, perhaps accompanied by the Nile tamarisk (*Tamarix nilotica*). *S. monoica* could have also grown in the wadi deltas of the region since it has a wide ecological range of distribution. Other shrubs in the wadis were *Leptadenia pyrotechnica*, *Salvadora persica* and perhaps the athel tamarisk (*Tamarix aphylla*). Wood samples from *Nitraria retusa* bushes have been charred and used as modern reference material in addition to wood anatomical atlases, but no charcoal was found in the excavated material so far.

Rhizophora mucronata occurs along the Egyptian Red Sea coast, but only close to the Sudanese border. *Bruguiera gymnorrhiza* may have grown in southern Egypt in the past, but at present there are no records of this species in the Red Sea north of Sudan. One can assume that the wood of these trees was cut in the south and taken in ships to the harbor of Mersa/Wadi Gawasis.

Ebony wood represents one of the valuable trading goods from the land of Punt. For several years it was unclear of which items the ebony charcoal derived from and for what reason the precious wood was put in some fire pits. The charcoal pieces from *Diospyros* were not found alone, but together with 2-10 other wood taxa, often 5-7, in the sample bags. These additional taxa comprise the typical woods for the charcoal assemblages at Mersa/Wadi Gawasis. Some of the remnants could have come from the burning of the ebony. The fragments identified in the previous field seasons were too small to make a statement on the original shape of the items. Remaining charcoal samples from excavations in 2007-2008, which were studied subsequently in the 2009-2010 field season, have now revealed several fragments of larger size, which gave hints to their outer structures. Mingled with charcoal from other taxa, a number of fragments form 4 rod-like structures (width/thickness: 1,3-1,9 cm/1-1,2 cm; 1,8-2,5 cm/0,7-1,1 cm; 1,3-1,9 cm/0,9-1,4 cm; 1,2-1,7 cm/0,8-1,0 cm). They occurred in WG 55, C2, SU2 and are irregularly shaped. Further samples from this excavation unit contained 1-6 pieces of ebony charcoal with similar shapes and came from SU1-5, SU11, and SU13. The identified ebony pieces are charred completely and do not show traces of wood.

Ebony wood was brought to ancient Egypt through tribute and trade and was strictly reserved for kings and the gods. Logs and rods that have reached the harbor of Mersa/Wadi Gawasis must have been registered, and damaging some of them would have been a serious incident. It can be

assumed that the ebony from WG 55 was burnt as offerings after the return of a successful expedition. WG 55 is located outside the entrance to Cave 7, to the east of which is a shrine (in WG 56) that was used throughout the 12th Dynasty. It is an interesting area, from where two sherds from Minoan pots, originally from Crete, have also been excavated. The possible finds of shaped ebony rods probably represent the first items of that kind excavated in Egypt. How they were brought from Punt to the harbour site was perhaps bound together in some of the wooden cargo boxes. They were later manufactured into artistic wooden objects or used as inlays.

Other analyzed wooden objects were the 2 steering oar blades from WG 32 (T72, T85/ *Faidherbia albida*); plank fragments (Type 2: T79,/ *Cedrus libani*, T80, T87/*Acacia nilotica*; T83/*Ficus sycomorus*); tool handles (from WG 60, D5, SU1, *Avicennia marina*); and a wooden spoon cut from a piece of cedar debris (from WG 61/65, SU32, *Cedrus libani*).

Conservation (*H. Wellman*)

The main focus of conservation efforts was on the ship timbers currently being excavated, and those in storage in the caves. Timbers were examined to determine their condition, and tests were performed with different consolidants and lifting systems to see how they should best be preserved.

The other major material being examined this season was the rope in Cave 5. On closer examination, it was confirmed that the ropes should not be removed from the cave. The ropes are badly degraded and cannot support their own weight if lifted. However, the environment in the sealed cave is appropriate for their long-term preservation.

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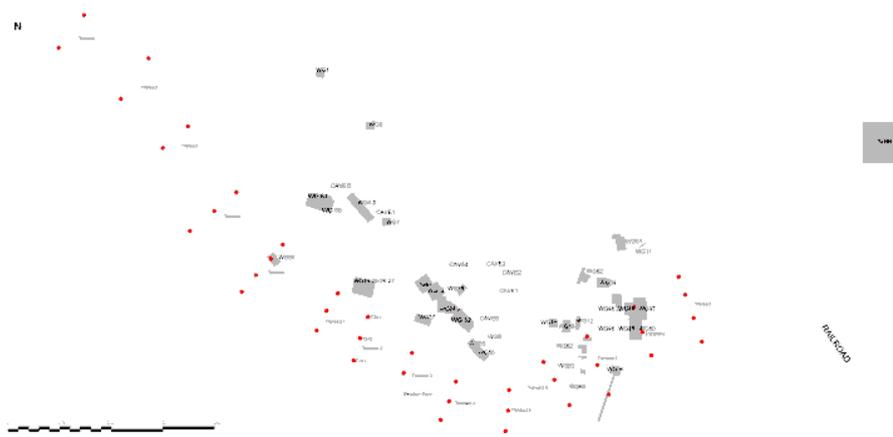


Fig.1 - map of the western sector of the site with excavation units



Fig.2 - entrance to Cave 8 in WG 61-65



Fig.3 - stratigraphic sequence at WG69



Fig.4 - living floor in WG 63



Fig.5 - pot of unusual fabric and technology which remains to be identified positively but would appear to be non-Egyptian from WG 67



Fig.6 - fragment with brown micaceous inclusions and smooth surfaces decorated with a band of parallel impressed lines made with the edge of a shell, from WG 65, A4-5, SU46



Fig.7 - well preserved faïence scarab seal with a pattern of scrolls with oblique symmetrical *nfr* signs from WG 61, E4, SU45



Fig.8 - sealing with traces of papyrus from the assemblage in front of Cave 8



Fig.9 - sandstone stela WG 29 from WG 61 with the royal protocol of the king Senusret II.



Fig.10 - fragment of papyrus PWG 02 from WG 61, C2, SU21