The Middle Kingdom Red Sea Harbor at Mersa/Wadi Gawasis

Kathryn A. Bard and Rodolfo Fattovich

Abstract

Recent excavations at the Middle Kingdom harbor at Mersa/Wadi Gawasis, on the Red Sea, have uncovered evidence of shrines aligned along the shore of the Red Sea and harbor facilities farther inland, including eight man-made caves located above an ancient lagoon that extended considerably inland from where the present-day shoreline is located. The harbor was used for the seafaring expeditions to Punt and Bia-Punt, located somewhere in the southern Red Sea region. Hieroglyphic and hieratic texts on stelae, seal impressions and ostraca, along with associated pottery have aided in dating the use of different features at the site, in the early and later Twelfth Dynasty.

Introduction[1]

In December 2001 the University of Naples "l'Orientale" (UNO), Naples, and the Italian Institute for Africa and the Orient (IsIAO), Rome, in collaboration with Boston University, Boston, started a joint archaeological project at the site of Mersa/Wadi Gawasis on the Red Sea coast (fig. 1), under the direction of Kathryn Bard and Rodolfo Fattovich.[2]

The site has been known since the early 1920s when George W. Murray identified it as the Ptolemaic-Roman harbor of Philoteras/Aenum.[3] In the late 1940s the site was visited by Leo A. Tregenza, who recorded about twenty structures as well as two possible engraved inscriptions in hieroglyphs and Greek on conglomerate slabs.[4]

In the mid-1970s Abdel Monem Abdel Haleem Sayed of the University of Alexandria, Egypt, conducted test excavations at this site, and found potsherds with painted (hieratic) inscriptions and inscribed stelae recording expeditions to Bia-Punt from a locality called *Sꜣww*, from the reigns of Senusret I (ca. 1956–1911 BC), Amenenhat II (ca. 1911–1877 BC), Senusret II (ca. 1877–1870 BC) and

[1] This article is dedicated to the memory of the late Wallace Sellers, who funded the Mersa/Wadi Gawasis excavations at their inception in 2001 and thereafter. He was an enthusiastic supporter of these excavations, and without him our discoveries there would not have been possible.

[2] The project has been funded by grants from the University of Naples "l'Orientale"; the Italian Institute for Africa and the Orient, Rome; the Ministry of Foreign Affairs, Rome; and generous contributions by Mr. and Mrs. Wallace Sellers, Lahaska, PA; and the Glen Dash Charitable Foundation, Woodstock, CT.

[3] George W. Murray, "The Roman Roads and Stations in the Eastern desert of Egypt," *JEA* 11 (1925), 138–50; see also Robert B. Jackson, *At Empire's Edge. Exploring Rome's Egyptian Frontier* (New Haven, 2002), 80, 96–97; Steven E. Sidebotham, Martin Hense, and Hendrikje M. Nouwens, *The Red Land. The Illustrated Archaeology of Egypt's Eastern Desert* (Cairo, 2008), 168. *Ed*: cap desert?

[4] Leo A. Tregenza, *Egyptian Years* (London, 1958), 182–83. No evidence of these inscriptions is visible today. Perhaps in the 1940s Tregenza was better able to read some of very badly preserved, engraved signs which are still visible on a man-made structure near the sea shore (see Rodolfo Fattovich, Andrea Manzo, Andrea D'Andrea, Giancarlo Iannone, and Chiara Zazzaro, "Mersa/Wadi Gawasis 2009," *Archaeogate. Il portale italiano di archeologia* (14-09-2009) [www.archaeogate.org].

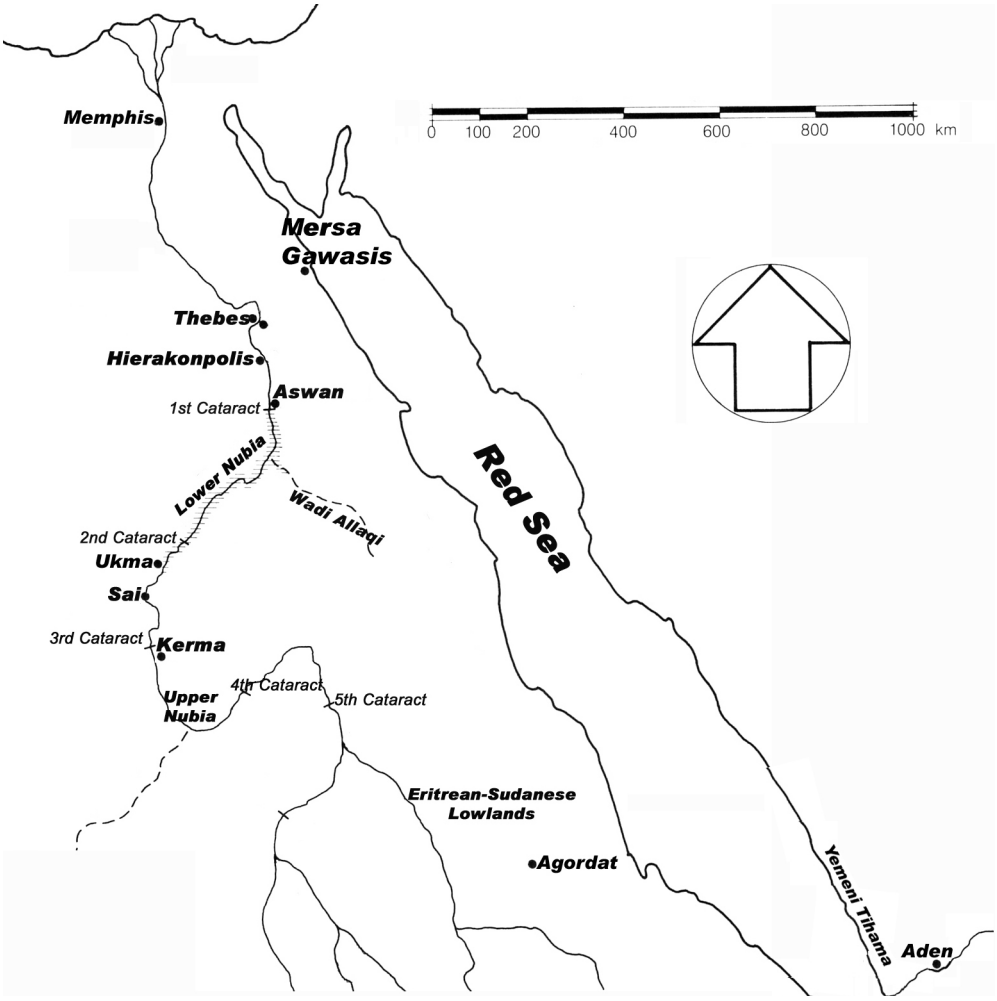

Fig. 1. Map with the location of Mersa/Wadi Gawasis.

Senusret III (ca. 1870–1831 BC).[5] Sayed also uncovered some carved, round-topped anchors[6] and a fragment of carved cedar timber with a mortise, most likely from a ship. Based on this evidence Sayed suggested that Mersa/Wadi Gawasis was the pharaonic port of *S3ww* for seafaring expeditions to Punt in the Twelfth Dynasty (ca. 1985–1773 BC).[7]

After Sayed's excavations the site was visited by Alessandra Nibbi in the late 1970s and maritime archaeologist Honor Frost in the early 1990s.[8] According to Alessandra Nibbi, Mersa/Wadi Gawasis was

[5] In this article we use the chronology published in Ian Shaw, ed., *The Oxford History of Ancient Egypt* (Oxford, 2000), 479–83.

[6] See Honor Frost, "Egyptian and Stone Anchors: Some Recent Discoveries," *Mariner's Mirror* 65 (1979), 137–61; idem, "Ancient Egyptian Anchors: A Focus on the Facts," *MM* 71 (1985), 348.

[7] Abdel Monem A. H. Sayed, "Discovery of the Site of the 12th Dynasty Port at Wadi Gawasis on the Red Sea Shore," *RdE* 29 (1977), 140–78; idem, *The Discovery of the Twelfth Dynasty Port in the Region of the Wadi Gawasis on the Red Sea Coast* (in Arabic) (Alexandria, 1978); idem, "Discovery of the Site of the 12th Dynasty Port at Wadi Gawasis on the Red Sea Shore," in Walter F. Reineke, ed., *Acts of the First International Conference of Egyptology* (Berlin, 1979), 569–78; idem, "New Light on the Recently Discovered Port on the Red Sea Shore," *Second International Congress of Egyptology* (Grenoble, 1979), abstract; idem, "Observations on Recent Discoveries at Wadi Gawasis," *JEA* 66 (1980), 154–57; idem, "New Light on the Recently Discovered Port on the Red Sea Shore," *CdÉ* 58 (1983), 23–37; idem, "Wadi Gasus," in Kathryn A. Bard, ed., *Encyclopedia of the Archaeology of Ancient Egypt* (London, 1999), 866–68.

[8] Alessandra Nibbi, "Some Remarks on the Two Monuments from Mersa Gawasis," *ASAE* 64 (1981), 69–74; Honor Frost, "Ports, Cairns and Anchors. A Pharaonic Outlet on the Red Sea," *Topoi* 6:2 (1996), 869–90.

a temporary harbor because of the absence of any visible evidence of substantial facilities. Honor Frost supported the interpretation of Mersa/Wadi Gawasis as an outlet for seafaring expeditions in the Red Sea. In 1994 Cheryl Ward conducted an underwater survey of the bay at Mersa Gawasis, but did not find any archaeological evidence.[9]

The UNO/IsIAO and BU Project has focused on: 1) confirming the use of the site as a harbor for seafaring expeditions to Punt in pharaonic times, 2) understanding the organization of these expeditions, and 3) providing archaeological evidence about the location of Punt. The project has included archaeological, paleoethnobotanical, archaeozoological, geological, and geo-archaeological investigations, as well as a geophysical survey, in order to outline the process of site formation in the environmental context. Spatial organization of the site within the paleoenvironmental setting was investigated in order to understand why Mersa/Wadi Gawasis was chosen as a harbor and how the site was used. Evidence of seafaring ships and exotic imported materials was excavated, and inscriptions regarding the expeditions to Punt were also collected.[10]

After a preliminary visit to the site in March 2001, the UNO/IsIAO and BU expedition conducted ten field seasons in the winters between 2001 and 2011.[11] Fieldwork consisted of systematic surface surveying and mapping with a total laser station and differential GPS, extensive excavations, geophysical surveys by magnetometer and electromagnetic induction, geological drillings and corings, and geoarchaeological test-pits.[12] The archaeological excavations were conducted using the "Stratigraphic Unit" (SU) methodology[13] within excavation units ranging from 4 m × 4 m to 10 m × 10 m in area, which were divided into squares of 2 m × 2 m.[14]

Digital technologies, such as remote sensing (on-ground and satellite images) and Geographic Information Systems (GIS), have been used for the analysis of the regional data. Three-dimensional reconstructions of the site and laser scanner models of man-made features were generated for a more detailed reconstruction of the archaeological landscape.[15] In this article a synthesis of the main results of the UNO/IsIAO and BU project are presented with a focus on the organization of the harbor and seafaring expeditions in the Red Sea, and the trade with the land of Punt.

The Site

Location

The ancient harbor of Mersa/Wadi Gawasis (26°33″26′N, 34°02″11′E) was located at the base of a fossil coral terrace at the northern end of the Wadi Gawasis, about 23 km south of the modern town of Safaga and 50 km to the north of Quseir.

[9] Cheryl Ward, "Archaeology in the Red Sea, the 1994 Red Sea Survey Report," *Topoi* 6:2 (1996), 853–68.

[10] See Kathryn A. Bard and Rodolfo Fattovich, eds., *Harbor of the Pharaohs to the Land of Punt. Archaeological Investigations at Mersa/Wadi Gawasis, Egypt, 2001–2005* (Napoli, 2007); idem, "Mersa/Wadi Gawasis: New Evidence of a Pharaonic Harbor," in Zahi Hawass and Janet Richards, eds., *The Archaeology and Art of Ancient Egypt*, I (Cairo, 2007), 81–86; idem, "Recent Excavations at the Ancient Harbor of Saww (Mersa/Wadi Gawasis) on the Red Sea," in Sue H. D'Auria, ed., *Offerings to the Discerning Eye* (Leiden, 2010), 33–38; Kathryn A. Bard, Claire Calcagno, Rodolfo Fattovich, Chiara Zazzaro, and Cheryl Ward, "Mersa/Wadi Gawasis: An Egyptian Harbor on the Red Sea," *AJA* 112 (2008), 307–10; Rodolfo Fattovich, "De la mer Rouge au pays du Pount: le port pharonique à l'embochoure du Ouadi Gaouasis, Recherches archéologiques 2001–2008," *BSFE* 171 (2008), 11–27.

[11] Reports of each field season, with detailed descriptions of the excavations, are published online at the website: http://www.archaeogate.org.

[12] Bard and Fattovich, *Harbor of the Pharaohs*; Kathryn A. Bard and Rodolfo Fattovich, eds., "Mersa/Wadi Gawasis 2007–2008," *Archaeogate* (30-12-2008) [www.archaeogate.org]; Kathryn A. Bard and Rodolfo Fattovich, "Mersa/Wadi Gawasis 2009–2010. Final Report," *Archaeogate* (01-12-2010) [www.archaeogate.org]; Rodolfo Fattovich and Kathryn A. Bard, eds., "Mersa/Wadi Gawasis 2006–2007," *Archaeogate* (20-06-2007) [www.archaeogate.org]; Fattovich et al., *Archaeogate* (2009).

[13] Edward C. Harris, *Principles of Archaeological Stratigraphy* (London, 1989).

[14] Bard and Fattovich, *Harbor of the Pharaohs*, 37–38.

[15] Bard and Fattovich, *Archaeogate* (2008); Bard and Fattovich, *Archaeogate* (2010); Fattovich et al., *Archaeogate* (2009).

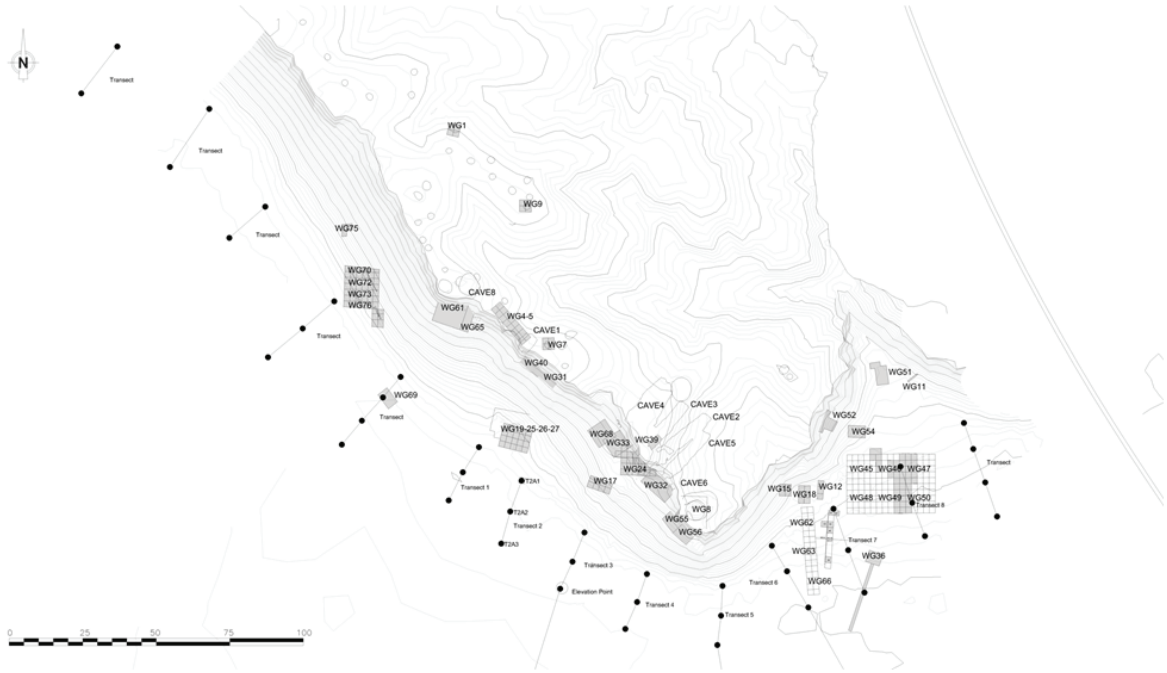

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Fig. 2. vMap of Mersa/Wadi Gawasis with excavated areas.

The archaeological site is about 650 m (east-west) by 320 m (north-south) in area, and is delimited by the seashore to the east, and the Wadi Gawasis to the south and west. Today, a paved road along the coast and a railroad cross the site from north to south and divide it into eastern, central, and western sectors. The eastern sector along the sea shore (*Mersa Gawasis*) and the western sector between the railroad and the wadi (*Wadi Gawasis*) are still well preserved. The central sector, between the paved road and the railroad, has been almost completely destroyed by the construction of the railroad in the 1980s[16] (fig. 2).

The mouth of the Wadi Gawasis was chosen as a location for the ancient harbor because in the late 3rd to mid-2nd millennium BC a lagoon within a large embayment was delimited by fossil coral terraces, over 10 m high, with an outlet for the seafaring ships.[17] The northern terrace was the main focus of the harbor facilities because it provided protection from the northern winds, which may be quite strong—as members of the expedition frequently experienced during the fieldwork. The remains of three or four stone mounds, about 5–6 m in diameter, and a few circular features on the top of the southern terrace suggest that this terrace was sometimes also used.[18]

A well at Bir Umm Al-Huwaytat along the Wadi Gasus, about 12 km to the west of the bay could have provided the expeditions with fresh water. This well was definitely used in Roman times, when a watering station was built there and the ancient coastal road (Via Nova Hadriana) passed close to it.[19] Two circular features like those visible at Wadi Gawasis and the occurrence of many Middle Kingdom

[16] Bard and Fattovich, *Harbor of the Pharaohs*, 29–30.

[17] Christopher J. Hein, Duncan M. FitzGerald, Glenn A. Milne, Kathryn Bard, and Rodolfo Fattovich, "Evolution of a Pharaonic harbor on the Red Sea: Implications for coastal response to changes in sea level and climate," *Geology* online, 24 May, 2011: 10.1130/G31928.1.

[18] Bard and Fattovich, *Harbor of the Pharaohs*, 30.

[19] Sayed, "Discovery of the Site," 141–46; Sidebotham, Hense, and Nouwens, *Red Land*, 42–50.

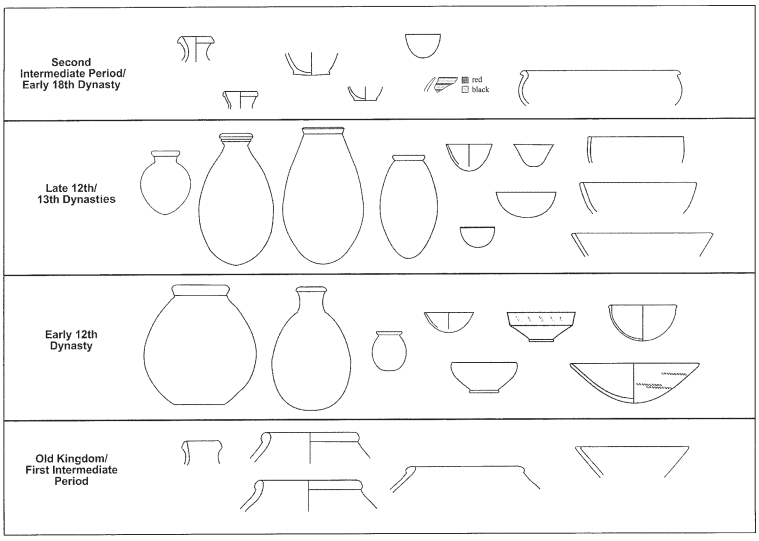

Fig. 3. Typological sequence of the ceramics (Bard and Fattovich, Harbor, fig. 52).

Table 1. List of radiocarbon dates (IFAO; BM)

Sample	Trench and Layer	Sampled item	Uncalibrated	Calibrated 1 σ (Reimer et alii 2004)
IFAO 205	WG 16, tr 1–2, SU 77/81	Charcoal (*Salvadora persica L.*)	2934 ± 56 BP	1260–1050 BC
BM 1846R	Unspecified	Halfa grass (?)	3080 ± 160 BP	1520–1100 BC
BM 1844R	Unspecified	Rope	3310 ± 100 BP	1740–1460 BC
IFAO 207	WG 39, SU 14	Charcoal (*Acacia sp.*)	3407 ± 47 BP	1760–1620 BC
IFAO 211	WG24, T 21	Wood (*Cedrus libani*)	3404 ± 48 BP	1760–1620 BC
IFAO 214	WG 56, A3, SU 9	Charcoal (*Acacia sp.*)	3517 ± 47 BP	1980–1690 BC
IFAO 213	WG 33, hearth 2	Charcoal (*Chenopodiaceae*)	3519 ± 48 BP	1980–1690 BC
IFAO 206	WG 39, SU 11	Charcoal (*Acacia nilotica*)	3680 ± 53 BP	2140–1970 BC
BM 1845R	Unspecified	Wood (*Cedrus libani*)	3650 ± 100 BP	2200–1890 BC

potsherds,[20] together with two inscribed, early 12th Dynasty stelae recording Bia-Punt and *S3ww* from this site,[21] indicate that this source of fresh water was also used at the same time as the harbor at Mersa/Wadi Gawasis.

Site chronology: overview

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Archaeological and textual evidence provide a chronology for use of the site of Mersa/Wadi Gawasis as a harbor in pharaonic times.[22] The typological sequence of the ceramics (fig. 3) and nine radiocarbon dates (Table 1) consistently demonstrate that the harbor was used in the Middle Kingdom (ca. 2055–1650 BC).[23]

[20] Kathryn A. Bard, Rodolfo Fattovich, Magaly Koch, Abdel Monem A. Mahmoud, Andrea Manzo, and Cinzia Perlingieri, "The Wadi Gawasis/Wadi Gasus, Egypt: A Preliminary Assessment," *Archaeogate* (09-09-2001), 4 [www.archaeogate.org]; Manzo and Wallace-Jones, per. comm., January 2010.

[21] Alessandra Nibbi, "Remarks on the Two Stelae from the Wadi Gasus," *JEA* 62 (1976), 45–56; Sayed, in Bard, *Encyclopedia*, 866–68.

[22] Bard and Fattovich, *Harbor of the Pharaohs*, 241–43.

[23] The radiocarbon dates were obtained from six samples of charcoal and wood the UNO/IsIAO and BU expedition submitted to the *Institut Française d'Archéologie Orientale* (IFAO), Cairo (IFAO 205, 206, 207, 211, 213, 214), and three samples from a rope,

Most of the ceramics date to the Twelfth and early Thirteenth Dynasties.[24] A few potsherds dating to the late Old Kingdom/First Intermediate Period and late Second Intermediate Period/early New Kingdom suggest that the harbor was used occasionally in these periods as well (although it is very unlikely that expeditions occurred during the First or Second Intermediate Period).[25]

Four charcoal or wood samples (IFAO 207, 211, 213, 214) provided calibrated radiocarbon dates between ca. 2000 and 1600 BC, which are consistent with the use of the harbor in the first half of the second millennium BC. The calibrated date of one charcoal sample (IFAO 206; 2140–1970 BC) falls within the First Intermediate Period and the early Middle Kingdom. One sample from cedar wood (BM-1845R; calibrated) was dated to 2200–1890 BC and possibly supports the use of the harbor at the end of the Old Kingdom. The date of another sample from rope (BM 1844R; calibrated 1740–1460) falls within the late Middle Kingdom/Second Intermediate Period/early New Kingdom. Two samples (BM-1846R; IFAO 205; calibrated) were dated to 1520–1100 BC and 1260–1050 BC, respectively, and suggest use of the harbor in the New Kingdom.[26]

Epigraphic evidence (on stelae, wooden boxes and ostraca), including stelae recorded by Sayed in the mid-1970s, confirms that the harbor was used throughout most of the Twelfth Dynasty, during the reigns of Senusret I, Senusret II, Senusret III, Amenemhat III (ca. 1831–1786 BC), and Amenemhat IV (ca. 1786–1777 BC).[27] An inscription from Bir Umm Al-Huwaytat recording a seafaring expedition during the reign of Amenemhat II also suggests use of the harbor during the reign of this king (Table 2).[28]

The Harbor

Archaeological evidence

No evidence of permanent architecture has been found at Mersa/Wadi Gawasis, supporting the interpretation that the harbor was used as a temporary base for the seafaring expeditions. The only substantial structures at the site were small ceremonial monuments, rock-cut chambers and galleries, and possible slipways for ships.[29] Most of the archaeological record at Mersa/Wadi Gawasis consists of the remains of ephemeral activities from the aftermath of these expeditions, such as hearths, and abandoned artifacts and debris. Altogether this evidence provides a coherent cultural landscape because of the repetitive use of the same areas for specific activities.

Small ceremonial structures were erected along the edge of the coral terrace from the coast (Mersa Gawasis) to the wadi (Wadi Gawasis). The southwestern corner of the terrace at Wadi Gawasis was

timber, and halfa-grass that Abel Monem A. H. Sayed submitted to the British Museum, London (BM 1844R, 1845R, 1846R). See Sayed, "On the non-existence of the Nile-Red Sea canal (so called Canal of Sesostris) during the Pharaonic times," in Sayed, *The Red Sea and its Hinterland in Antiquity* (Alexandria, 1993), 127–47, fig. 1.

[24] Cinzia Perlingieri, "Egyptian Ceramics," in Bard and Fattovich, *Harbor of the Pharaohs*, 115–25; Sally Wallace-Jones, "Pottery," in Bard and Fattovich, *Archaeogate* (2008), 43–50; Wallace-Jones, "Pottery," in Bard and Fattovich, *Archaeogate* (2010), 17–25; Perlingieri, in Fattovich and Bard, *Archaeogate* (2007), 27–29.

[25] Manzo and Perlingieri, in Bard and Fattovich, *Harbor of the Pharaohs*, 115–25.

[26] All radiocarbon dates have been calibrated with Oxcal 4.1.

[27] Elsayed Mahfouz, Andrea Manzo, and Rosanna Pirelli, "Textual Evidence," in Bard and Fattovich, *Harbor of the Pharaohs*, 217–38; Mahfouz and Manzo, "Epigraphy," in Bard and Fattovich, Archaeogate (2008), 30–34; Mahfouz, "Epigraphic Report/Rapport épigraphique," in Bard and Fattovich, Archaeogate (2010), 27–31; Mahfouz and Pirelli, "Epigraphy," in Fattovich and Bard, *Archaeogate* (2007), 47–49; Mahfouz, "Les ostraca hiératiques du Ouadi Gaouasis," *RdÉ* 59 (2008), 267–334; Pirelli, "Two New Stelae from Mersa Gawasis," *RdÉ* 58 (2007), 87–110; Sayed, "Discovery of the Site,"140–78; Sayed, "New Light on the Recently Discovered Port," 23–37.

[28] See Sayed, in Bard, *Encyclopedia*, 866–68.

[29] Bard and Fattovich, *Harbor of the Pharaohs*; Bard and Fattovich, *Archaeogate* (2010).

Table 2. List of inscriptions with the name of kings and years of reign

King	Year	Text
Senusret I	Year 24	Ankhu monument
Senusret I	?	Intef-ikr stela
Senusret I	?	Round-topped stelae
Amenemhat II	Year 28	North. 1934
Senusret II	Year 1	North. 1935
Senusret II	Year 2	WG Stela 29
Senusret III	?	WG Stela 14
Senusret III	Year 5	Doc. 1
Amenemhat III	?	WG Stela 5
Amenemhat III	?	WG Stela 6
Amenemhat III	Year 23	WG Stela 16
Amenemhat III	Year 41	WG Stela 23
Amenemhat III	?	WG Ostracon 101 (in Cave 1)
Amenemhat IV	Year 8	2 cargo boxes, Ostracon WG 111 (in WG 47)

Wadi Gasus/Gawasis texts with kings' names and year dates

Wadi Gawasis texts with year dates but no king's name

King	Year	Text
?	Year 4	Doc. 5
?	Year 5	Doc. 2, 4, 7
?	Year 6	Ostracon WG 114 (in WG 61)
?	Year 12	Ostracon WG 106 (at entrance to Cave 2)
?	Year 16	Doc. 23

more frequently used by members of the expeditions: camps were set up on the top and at the southern base of the terrace; chambers and galleries were cut into the western wall of the terrace; activity areas were organized along the western slope and base of the terrace; and a ritual area was located on the western slope of the terrace.[30]

The ceremonial structures included ten small monuments at Mersa Gawasis, one shrine in the central sector of the site, and five stone structures at Wadi Gawasis.[31] Eleven of these structures were partially excavated in the mid-1970s by Sayed, who discovered stelae associated with at least four monuments.[32] Most of the structures were already disturbed when Sayed investigated the site.[33] Six ceremonial structures at Mersa Gawasis (Features 1, 4, 6, 7, 8, 10) and three stone circles (WG 3/6, WG 7, WG 8) at Wadi Gawasis were re-investigated by the UNO/ISIAO and BU expedition. The later excavations confirmed that these features were most likely used for ceremonial activities.[34] Possibly these structures also served as landmarks indicating the harbor entry to ships returning from Punt.[35]

The ceremonial structures at Mersa Gawasis included, from north to south: a platform built with coral rocks (Feature 1); seven gravel mounds with internal chambers, made with coral rocks and slabs

[30] Kathryn A. Bard and Rodolfo Fattovich, "Spatial Use of the Twelfth Dynasty Harbor at Mersa/Wadi Gawasis for the Seafaring Expeditions to Punt," *JAEI* 2:3 (2010), 1–13.

[31] Bard and Fattovich, *Harbor of the Pharaohs*, 31, 39–44; Fattovich et al., *Archaeogate* (2009).

[32] Sayed, "Discovery of the Site," 150–73, map 3.

[33] Sayed, *personal communication* (December, 2001).

[34] Bard and Fattovich, *Harbor of the Pharaohs*, 39–50; Fattovich et al., *Archaeogate* (2009).

[35] See also Frost, "Ports, Cairns and Anchors."

of conglomerate stone (Features 2, 3, 5, 6, 7, 8, 10); a circular enclosure of coral rocks with a small, interior circular chamber (Feature 4); and a structure built with coral rocks (Feature 11).[36] Limestone fragments, most likely from anchors, were often associated with these structures. Sayed collected a few, small Middle Kingdom stelae of limestone, which were associated with Features 4 and 11.[37]

A small shrine consisting of two anchors placed horizontally on a base and three upright blocks with inscriptions, arranged perpendicularly, was excavated by Sayed in the central sector of the site. The stela recorded an expedition of the "Overseer of the audience-chamber" Ankhu, to Bia-Punt during the reign of Senusret I.[38] A small stela from the rubble of the railway construction to the east of Ankhu's shrine suggests that another monument was located in the same area.[39]

Three stone circles (WG 3/6, WG 7, WG 8) were erected along the edge of the western terrace at Wadi Gawasis.[40] One of them (WG 3/6) was originally associated with a stela of Senusret I's vizier Intef-iker recording an expedition to Bia-Punt.[41] Two mounds were also built at the southwestern and western edge of the terrace to the east and north of the stone circles.[42] A small, completely eroded stela was originally associated with the mound at the southwestern edge of the terrace.[43] Another stela from the deposit at the top of the western slope, dating to Year 2 of the reign of Senusret II, was most likely associated with the northern mound.[44]

Evidence of camps has been recorded on the top and at the southern base of the western terrace at Wadi Gawasis. On the top of the terrace 24 small circular pits and concentrations of potsherds are visible. The UNO/IsIAO and BU excavations demonstrated that the circular pits were the foundations of small huts or tents and the concentrations of ceramics were associated with light shelters.[45]

Along the southern slope at the base of the western terrace at Wadi Gawasis was the beach where members of the seafaring expeditions were camping and the harbor area where ships were landing. In the beach area were hearths with the remains of fish, and along the shore of the lagoon were a concentration of several hundred fragments of storage jars and a pitted anchor that had certainly been used in the sea.[46] A natural rock shelter with evidence of a constructed mud-brick platform and many fragments of storage jars was discovered on the slope of the terrace here. At the base of this slope Sayed found unfinished anchors, ostraca recording the word "Punt," and fragments of jars, suggesting that magazines were located in this area.[47]

Two isolated rock-cut chambers (Caves 1, 8) and seven long galleries (Caves 2, 3, 4a/4b, 5, 6, 7) were cut into the western wall of the coral terrace at Wadi Gawasis.[48] These facilities were used as work-

[36] A small structure (Feature 9) between Features 8 and 10 resulted to be a shallow hole with an uncertain age and meaning; Fattovich et al., *Archaeogate* (2009).

[37] Sayed, "Discovery of the Site," map 3, pl. 12, 13 a–c.

[38] Sayed, "Discovery of the Site," 150–69. Today, only the foundations of this structure are still visible.

[39] Bard and Fattovich, *Harbor of the Pharaohs*, 31. The stela is unfortunately very eroded and the original inscription was completely denuded.

[40] Bard and Fattovich, *Harbor of the Pharaohs*, 45–49.

[41] Bard and Fattovich, *Harbor of the Pharaohs*, 45–47; Sayed, "Discovery of the Site,"169–73.

[42] Both mounds were disturbed by the earlier excavations and were not reinvestigated by the Italian-American expedition.

[43] Mahfouz, "Les stèles," in Bard and Fattovich, *Archaeogate* (2008), 32.

[44] Mahfouz, in Bard and Fattovich, *Archaeogate* (2010), 28–30.

[45] Bard and Fattovich, *Harbor of the Pharaohs*, 31–32.

[46] Bard and Fattovich, *Harbor of the Pharaohs*, 50–54; Kathryn A. Bard, Rodolfo Fattovich, Ilaria Incordino, and Tracy Spurrier, "Southern Terrace Slope," in Bard and Fattovich, *Archaeogate* (2008), 25–29; Rodolfo Fattovich and Dixie Ledesma, "Harbor Area," in Bard and Fattovich, *Archaeogate* (2010), 8–10; Tracy Spurrier and Ilaria Incordino, "WG 37, WG38 and WG42," in Fattovich and Bard, *Archaeogate* (2007), 25–27.

[47] Sayed, *Discovery*; Sayed, *Second ICE* (Grenoble 1979), abstract; Sayed, "New Light on the Recently Discovered Port, 23–37.

[48] Caves 4a/4b, 6 and 7 have not been investigated by the expedition because of the very unstable state of preservation of the rock.

Fig. 4. Ropes in Cave 5.

shops and storerooms.[49] An estimated 26–30 coils of rope from ships were found inside Cave 5 (fig. 4). These rock-cut structures were associated with carved niches for stelae, and a small shrine located near the entrance to Cave 7.[50]

Clay sealings and seals, wooden boxes, ration(?) bowls, mats, fragments of bags, hearths, and a mud-brick floor were excavated on the slope in front of the caves. This evidence suggests that most of the administration and logistics relating to the seafaring expeditions were practiced in this area.[51]

Chaff-tempered "platters," possibly used as bases for domed ovens,[52] were made in an activity area at the base of the western slope, where hearths from food production and many fragments of bread molds (both locally made and others probably imported from the Nile Valley) were also found. Also made in this area were lithic tools associated with wood debris and barnacles, which had been removed from used ship timbers.[53]

Finally, four quadrangular structures built with mud-bricks were recorded at the base of the western slope to the north of the activity area. They were associated with a great quantity of wood debris and hearths, suggesting that carpentry activity was practiced in this area. These facilities were probably the slipways used to dismantle ships at the end of expeditions.[54]

Paleoenvironment

Geological investigations with auger cores, pulse auger cores, and wash borings, supported by the study of shells from the cores, demonstrated that the mouth of the Wadi Gawasis was a wide bay with a lagoon at the time the harbor was used by the ancient Egyptians.[55]

The paleo-bay was formed in the Early Holocene as a consequence of a high stand of the sea level about 1.0 m above the modern mean one, and was connected to the sea through a channel, about 10 m deep and 150 m wide. The bay occupied a maximum area of 560,000 m^2 with a depth of approximately 8 m in the 6th millennium BC. Beginning in the 5th millennium BC the bay has been progressively

[49] Kathryn A. Bard, Rodolfo Fattovich, and Cheryl Ward, "Sea Port to Punt: New Evidence from Marsa Gawasis, Red Sea (Egypt)," in Janet Starkey, Paul Starkey, and Tony Wilkinson, eds., *Natural Resources and Cultural Connections of the Red Sea* (Oxford, 2007), 143–48.

[50] Bard and Fattovich, *Harbor of the Pharaohs*, 58–72; Kathryn A. Bard, Claire Calcagno, Elsayed Mahfouz, Tracy Spurrier and Chiara Zazzaro, "Western Terrace Slope," in Bard and Fattovich, *Archaeogate* (2008), 19–25; Kathryn A. Bard, Andrea Manzo, Dixie Ledesma,Tracy Spurrier, Cheryl Ward and Chiara Zazzaro, "Western Terrace Slope," in Bard and Fattovich, *Archaeogate* (2010), 10–15; Claire Calcagno and Chiara Zazzaro, "WG 39/Cave 3," in Fattovich and Bard, *Archaeogate* (2007), 20–22.

[51] Bard and Fattovich, *Harbor of the Pharaohs*, 54–58, 60–61, 72–73; Bard, Calcagno, Mahfouz, Spurrier, and Zazzaro, in Bard and Fattovich, *Archaeogate* (2008), 16–25; Bard, Manzo, Ledesma, Spurrier, Ward, and Zazzaro, in Bard and Fattovich, *Archaeogate* (2010), 10–15.

[52] Sally Wallace-Jones, personal communication 2011.

[53] Bard and Fattovich, *Harbor of the Pharaohs*, 73–77, 245–46; Cinzia Perlingieri and S. Terry Childs, "*WG 19/25/26/27/44*," in Fattovich and Bard, *Archaeogate* (2007), 23–25.

[54] Cheryl Ward, *personal communication*, January 2011.

[55] Duncan FitzGerald and Christopher Hein, "Coastal Geology," in Fattovich and Bard, *Archaeogate* (2007), 2–6; FitzGerald and Hein, "Coastal Geology," in Bard and Fattovich, *Archaeogate* (2008), 3–12; Christopher Hein and Duncan FitzGerald, "Coastal Geology," in Bard and Fattovich, *Archaeogate* (2010), 2–8; Alfredo Carannante and Carla Pepe, "Shells," in Bard and Fattovich, *Harbor of the Pharaohs*, 212–15; Carannante and Pepe, "Archaeomalacology," in Fattovich and Bard, *Archaeogate* (2007), 11–12.

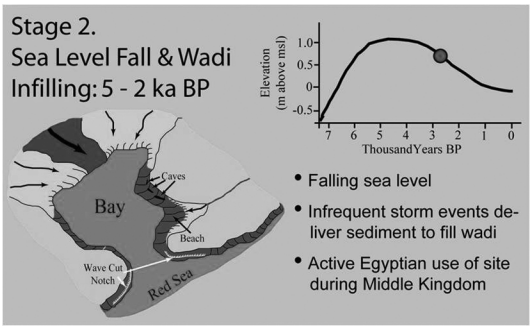

Fig. 5. Largest area occupied by the paleo-bay at Wadi Gawasis.

buried by eolian and river sediments related to wadi floods, as a consequence of more rainfall to the Wadi Gawasis watershed and greater wadi activity than today. In the 3rd millennium BC slower infilling rates due to increasing aridity along with slowly falling sea levels allowed for the existence of a stable, shallow lagoon. In the 2nd millennium BC the sea level was about 0.5 m to 0.85 m higher than the present one, and thus could provide deep enough water for safe navigation into the lagoon. The process of bay infilling continued up to about AD 1000, when the bay was completely closed (fig. 5).[56]

Test-pits at the base of the terrace at Wadi Gawasis also revealed that the shore of the lagoon was originally covered with mangroves (*Avicennia marina*), which were destroyed during the course of site occupation/use.[57] This stratigraphic evidence of declining amounts of mangrove roots later in time is supported by the great quantity of local gray mangroves used as a fuel at the site.[58] The use of tamarisk (*Tamarix* sp.) as fuel at the site also suggests that this bush grew in the harbor surroundings, as it grows in the Red Sea coastal desert.[59]

Routes to the Harbor

The land routes from the Qena bend in the Nile to the Red Sea coast at Mersa/Wadi Gawasis have not yet been clearly identified in the absence of systematic surveys in the central sector of the Eastern Desert to the north of the Wadi Hammamat. A virtual model of these routes has been generated integrating archaeological, topographical, geological, and hydrological data.[60] The model suggests that two main systems of routes could have been used to get to Mersa/Wadi Gawasis from the Qena bend (fig. 6).[61]

The first route may have followed the Wadi Hammamh and Wadi Abu Jarida, across a plateau to the north of Jebel Maghrabyyia, as far as Bir Al Jidami, and, after crossing another plateau to the north of Jebel Simna, Bir Simna. At Bir Simna the route took a northern track along the Wadi Safaja to the coast, with a possible track reaching the coast to the north of present-day Safaja, and/or a southern track to the sea along the Wadi Simna, Wadi Saqi, and Quwayh. A north-south route crossing the upper Wadi Gawasis and Wadi Gasus, from Bir As Saqi along the Wadi Saqi, joined these two routes and

[56] Hein et al., *Geology*.

[57] Bard and Fattovich, *Archaeogate* (2008), 27–29; Bard and Fattovich, *Archaeogate* (2010), 16–17.

[58] Rainer Gerisch, "Identification of charcoal and wood," in Bard and Fattovich, *Harbor of the Pharaohs*, 170–85; Gerisch, "Woods and charcoal," in Bard and Fattovich, *Archaeogate* (2008), 70–72; Gerisch, "Charcoal and wood remains," in Bard and Fattovich, *Archaeogate* (2010), 51–58; Gerisch, "Identification of charcoal and wood," in Fattovich and Bard, *Archaeogate* (2007), 43–45.

[59] Gerisch, in Bard and Fattovich, *Harbor of the Pharaohs*, 173.

[60] Kathryn A. Bard, Rodolfo Fattovich, and Andrea Manzo, "The Ancient Harbor at Mersa/Wadi Gawasis (Eastern Desert, Egypt) and How to Get There: New Evidence of Pharaonic Seafaring Expeditions in the Red Sea," in F. Förster and H. Riemer, eds., *Desert Road Archaeology in Ancient Egypt and Beyond*, Cologne (in press). Andrea Manzo generated the model implementing GIS with ArcGis 9.

[61] See Louise Bradbury, "Reflections on Traveling to 'God's Land' and Punt in the Middle Kingdom," *JARCE* 25 (1988), 127–56; Abdel Monem Abdel Haleem Sayed, "The Land of Punt: Problems of the Archaeology of the Red Sea and the Southern Delta," in Zahi Hawass, ed., *Egyptology at the Dawn of the Twenty-first Century*, 1 (Cairo, 2003), 432–39.

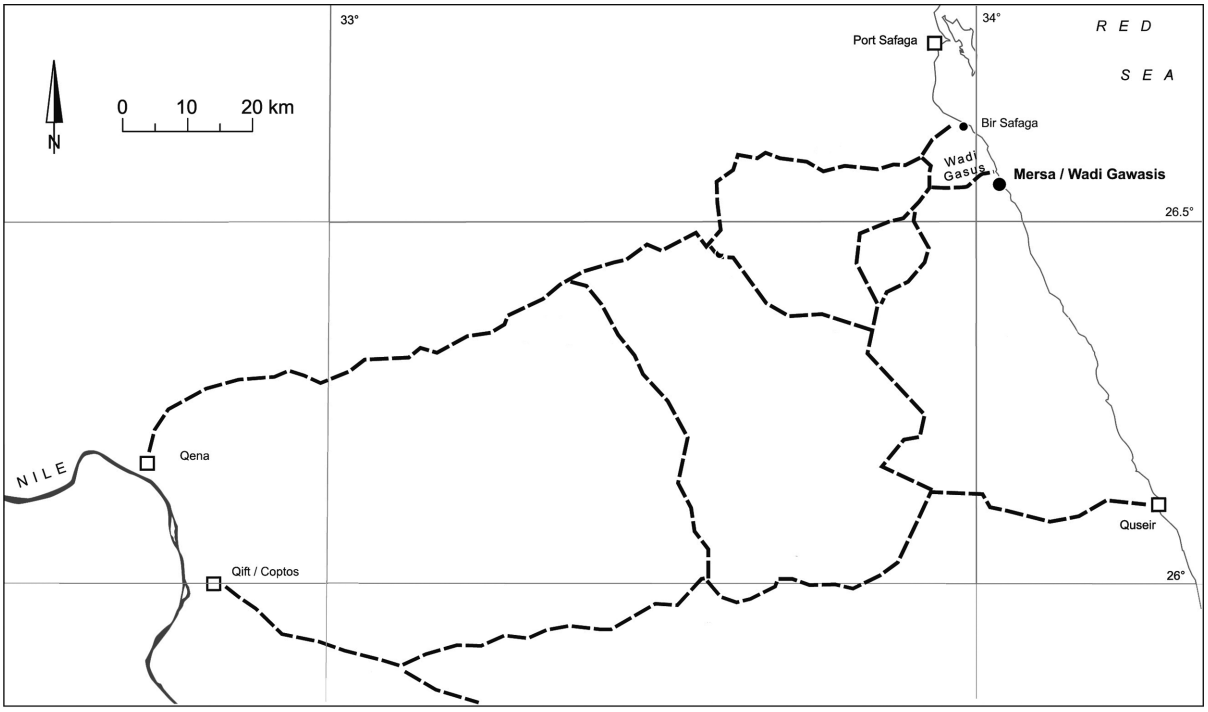

Fig. 6. Desert routes to Mersa/Wadi Gawasis.

could have been used to get to Mersa/Wadi Gawasis, either from the northern route or the southern one.

The second route possibly followed the traditional route to the Red Sea along the Wadi Hammamat,[62] and two routes from the Wadi Hammamat to Bir Al Jidami and Bir As Saqi, where they joined the desert routes to Mersa/Wadi Gawasis.

The routes in the virtual model also connected the Nile Valley in Upper Egypt to the main ancient mining sites of the Eastern Desert,[63] suggesting that expeditions to Mersa/Wadi Gawasis were associated with mining activities in this region, as textual evidence, such as the inscription of Henu, recording the exploitation of quarries in the Wadi Hammamat by workers of a seafaring expedition to Punt, suggests.[64]

Spatial use of the harbor through time

A few fragments of jars and bowls from the bottom of the deposit in Cave 1, and a possible fragment of an Old Kingdom bread mold in a dump with Middle Kingdom potsherds at the base of the slope in front of Caves 1 and 8 suggest that this area of the site was used in the late 3rd millennium BC and

[62] See Couyat-Montet, *Inscr. du Ouadi Hammamat*.

[63] Dietrich D. Klemm, Rosemarie Klemm, and Andres Murr, "Ancient Gold Mining in the Eastern Desert of Egypt and the Nubian Desert of Sudan," in Renée Friedman, ed., *Egypt and Nubia. Gifts of the Desert* (London, 2002), 215–31; G. Fuchs, V. Hašek and A. Poichystal, "Application of Geophysics in the Research of Ancient Mining in Egypt," in Feisal A. Esmael, ed., *Proceedings of the First International Conference on Ancient Egyptian Mining & Metallurgy and Conservation of Metallic Artifacts* (Cairo, 1995), 33–53.

[64] Couyat-Montet, *Inscr. du Ouadi Hammamat*, 81–84.

Cave 1, ca. 7.0 m × 4.5 m in area and 2.0 m high, was excavated at this time.[65] A few potsherds, possibly dating to the late Old Kingdom/First Intermediate Period, were collected at the base of the southern slope of the coral terrace, suggesting that the harbor area was also used at this time.[66] Though scant, this evidence is consistent with the textual record of seafaring expeditions to Punt during the reigns of Sahure (ca. 2487–2475 BC) and Pepy II (ca. 2278–2184 BC).[67]

The ceramic evidence indisputably points to the use of the whole site in the Twelfth Dynasty.[68] The top and western slope of the coral terrace, as well as the harbor area at Wadi Gawasis were occupied in the early to mid-Twelfth Dynasty.[69] The facilities dating to this period included light shelters, small circular huts (or tents) and two stone structures (WG 3/6, WG 8) on the top of the western terrace; small camps in the harbor area; Cave 1, which was certainly used at this time, and another rock-cut chamber (Cave 8), 5.0 m × 4.8 m in area, to the north of Cave 1.[70] The shrine with the inscription of Ankhu was built at the southern edge of the terrace at this time, while a few potsherds from Mersa Gawasis (WG 12) suggest that this area was used in the early second millennium BC.[71]

The whole slope and base of the western terrace and the harbor area at Wadi Gawasis, as well as the eastern terrace at Mersa Gawasis were used in the later Twelfth Dynasty (and early Thirteenth Dynasty?).[72] The rock-cut galleries (Caves 2–7) and a small shrine along the western slope of the terrace, the activity area and the mud-brick slipway(?) structures at the base of the western slope, the camps and concentration of jars in the harbor area at Wadi Gawasis, and the ceremonial monuments at Mersa Gawasis definitely date to this period.

This dating is also supported by several radiocarbon dates. Two charcoal samples (IFAO 206 and IFAO 207) from the deposit inside Cave 3 provided the following calibrated dates:

1) 2140 BC–2010 BC 59.5% / 2000 BC–1977 BC 8.7% (1σ) // 2205 BC–1916 BC 95.4% (2σ) (IFAO 206).
2) 1755 BC–1630 BC 68.2% (1σ) // 1880 BC–1608 BC 94.3% / 1570 BC–1561 BC 0.7% / 1546 BC–1541 BC 0.4% (2σ) (IFAO 207).

The dating of sample IFAO 207 is consistent with the associated ceramics and confirms the use of Cave 3 in the late Twelfth to early Thirteenth Dynasties. The dating of sample IFAO 206 might suggest an earlier use of the gallery in late Eleventh to early Twelfth Dynasties, but it is possible that this sample was from a discarded timber from an earlier expedition that was burned for fuel.

A sample of cedar from a ship timber used to reinforce the entry to the rock-cut gallery Cave 2 was radiocarbon dated to 1754 BC–1628 BC 68.2% (1σ) // 1879 BC–1838 BC 7.4% / 1830 BC–1606 BC 85.4% / 1574 BC–1558 BC 1.5% / 1551 BC–1538 BC 1.1% (2σ) (IFAO 211). This date suggests that the entry to the gallery was reinforced in the late Twelfth Dynasty.

A charcoal sample (IFAO 213) from a hearth associated with Canaanite ceramics at the top of the deposit covering the entry of the Cave 3 gallery provided a radiocarbon date of 1907 BC–1771 BC 68.2%

[65] Perlingieri, in Bard and Fattovich, *Harbor of the Pharaohs*, 110, 116, 122; Sally Wallace-Jones, "Pottery," in Bard and Fattovich, *Archaeogate* (2010), 22.

[66] Bard and Fattovich, *Harbor of the Pharaohs*, 51.

[67] Kenneth A. Kitchen, "The Land of Punt," in Thurstan Shaw, Paul Sinclair, Bassey Andah, and Alex Okpoko, eds., *The Archaeology of Africa. Food, Metals and Towns* (London, 1993), 587–89.

[68] Bard and Fattovich, *JAEI* (2010).

[69] Perlingieri, in Bard and Fattovich, *Harbor of the Pharaohs*, 110–11, 115–25.

[70] Wallace-Jones, in Bard and Fattovich, *Archaeogate* (2010), 18–21.

[71] Perlingieri, in Bard and Fattovich, *Harbor of the Pharaohs*, 116.

[72] Perlingieri, in Bard and Fattovich, *Harbor of the Pharaohs*, 110–25; Perlingieri, in Fattovich and Bard, *Archaeogate* (2007), 27–29; Wallace-Jones, in Bard and Fattovich, *Archaeogate* (2008), 46–49; Wallace-Jones, in Bard and Fattovich, *Archaeogate* (2010), 17–25.

(1σ) // 2008 BC–2004 BC 0.3% / 1974 BC–1737 BC 93.7% / 1710 BC–1696 BC 1.4% (2σ), which is consistent with the dating of the associated ceramics to the late Twelfth Dynasty to early Thirteenth Dynasty.

A charcoal sample from a hearth associated with a small shrine to the east of the entrance to Cave 7 yielded a radiocarbon date of 1900 BC–1770 BC 68.2% (1σ) // 1972 BC–1736 BC 93.9% / 1711 BC–1695 BC 1.5% (2σ) (IFAO 214). This date supports the use of the shrine in the late Twelfth (and early Thirteenth?) Dynasty, and is thus consistent with the associated late Twelfth Dynasty ceramics there. But the ceramics associated with the shrine were very mixed throughout the strata: both early and later Twelfth Dynasty ceramics were found together, suggesting that the shrine was abandoned for periods of time between expeditions and then was periodically repaired and cleaned out.[73]

Only a charcoal sample from a transect in front of the entrance to the Cave 2 provided a later radiocarbon date of 1256 BC–1236 BC 6.7% / 1215 BC–1051 BC 61.5% (1σ) // 1369 BC–1358BC 0.7% / 1315 BC–976 BC 94.5% / 952 BC–949 BC 0.1% (2σ) (IFAO 205). This sample might be intrusive, as the associated ceramics date to the Middle Kingdom.

Finally, potsherds ascribable to the (Second Intermediate Period?)/early Eighteenth Dynasty were collected on top of a deposit of windblown sand at the entrance to Cave 2, as well as along the slope and on the top of the western terrace, suggesting that the site was frequented in the mid-2nd millennium BC.[74] In Cave 2 these ceramics were associated with the wooden blades of a ship rudder. This evidence might be consistent with the textual and iconographic record of the Punt expedition of Queen Hatshepsut (ca. 1473–1458).[75]

The Seafaring Expeditions

Evidence of seafaring expeditions

The UNO/IsIAO and BU excavations at Mersa/Wadi Gawasis have demonstrated that the site was associated with maritime activity in the Red Sea during the Middle Kingdom. Excavation in the western sector of the site at Wadi Gawasis, in particular, revealed much evidence about seafaring expeditions in the Twelfth Dynasty: ship timbers, anchors, ropes, cargo boxes, administrative devices, inscribed stelae, ostraca, fragments of papyri, ceramics, lithics, and plant and animal remains.

Over ninety timbers from the hull, deck and steering oars of ships, together with tenons, dovetails, and copper strips used as fastenings were recorded outside and inside the rock-cut galleries.[76] The timbers included two pairs of blades from two different ship rudders, one crutch, one beam, one knife-shaped hull plank, thirty seven hull, and deck planks, and fragments of tenon and dovetail fastenings, which provided crucial information about the technology of ship building for seafaring expeditions in the Middle Kingdom.[77]

Most timbers showed traces of barnacle and shipworm infestation, which confirmed that they were discarded after the return of the ships and were recycled as components of ramps to the rock-cut galleries and other structures.[78] Better preserved timbers, on the contrary, were scraped and cleaned to

[73] Sally Wallace-Jones, personal communication, January, 2010.

[74] Perlingieri, in Bard and Fattovich, *Harbor of the Pharaohs*, 114–15, 117.

[75] Kitchen, in Shaw, Paul, Andah, and Okpoko, *Archaeology of Africa* (London 1993), 592–97.

[76] Ward and Zazzaro, "Finds: Ship evidence," in Bard and Fattovich, *Harbor of the Pharahos*, 135–53; Ward and Zazzaro, "Ship Timbers and Maritime Artifacts," in Bard and Fattovich, *Archaeogate* (2010), 31–47; Claire Calcagno and Chiara Zazzaro, "Ship Wood," in Bard and Fattovich, *Arcchaeogate* (2008), 36–41; Calcagno and Zazzaro, "Ship components," in Fattovich and Bard, *Archaeogate* (2007), 30–33.

[77] Cheryl Ward, "From River to Sea: Evidence for Egyptian Seafaring Ships," *JAEI* 2:3 (2010), 2–49.

[78] Ward and Zazzaro, in Bard and Fattovich, *Harbor of the Pharaohs*, 143–46.

be used again, as we can infer from a great quantity of wood debris associated with rough lithic tools (mainly scrapers) outside Cave 7.[79]

Seventeen limestone or conglomerate stone anchors were recorded on the western slope and at the southern base of the terrace at Wadi Gawasis, where some were used to reinforce the entrance to rock-cut rooms and galleries.[80] Several other anchors were associated with the ceremonial structures at Mersa Gawasis. Most anchors had not been used in the sea, except for a conglomerate stone anchor with a pitted surface excavated in the harbor area.[81] The recorded anchors range between 1.05 and 0.21 m in length, suggesting that some of them were probably made for small boats.[82]

An estimated twenty six-thrity coils of rope were found in Cave 5 and several hundred fragments of cordage, sometime with knots, were recorded in the western sector of the site.[83] The rope bundles from Cave 5, each about 1 m long and 0.6 m wide, were carefully stored on the floor of the gallery to be used or reused for a future expedition that never happened. These coils have been left in Cave 5 because they are too fragile to move.

Forty-three wooden boxes, ranging between 50–52 cm × 32–34 cm × 27–29 cm, and 45–48 cm × 30–34 cm × 20 cm in size, were found piled together on the western slope of the terrace in front of Cave 6.[84] These were cargo boxes to hold commodities brought from Punt, according to the same inscription on two boxes.[85]

Clay sealings, often with seal impressions, have been found close to the cargo boxes in front of Cave 6 and outside Cave 8, about 80 m to the north of Cave 6. These sealings point to a sophisticated administrative control of the commodities. Several sealings from the area of the cargo boxes had the impression of the boxes and pegs on the inside, suggesting that the boxes were carefully sealed in Punt and were opened at the harbor site where the cargo was transferred to more suitable containers for transport to the Nile Valley. A scarab seal was excavated outside Cave 8.[86]

Twenty-nine stelae were found along the western slope of the coral terrace. Most stelae were originally placed in niches, which had been carved in the wall of the terrace above the entries to the complex of rock-cut galleries (Caves 2–6). Above the entrance to Cave 4a/4b two large niches had been cut for large monumental stelae, one of which was of granite. The granite stela was found farther down the terrace slope, but its surface was completely eroded and without an inscription. Another stela was also found outside the entrance to Cave 8, but had probably fallen down from the top of the terrace.

[79] Alfredo Carannante, "Archaeozoology," in Bard and Fattovich, *Archaeogate* (2008), 12–14; Giulio Lucarini, "Lithic assemblage," in Bard and Fattovich, *Archaeogate* (2008), 56.

[80] Zazzaro, "Stone anchors and pierced stones," in Bard and Fattovich, *Harbor of the Pharaohs*, 153–63; Chiara Zazzaro and Mohammed Mustafa Abdel Maguid, "Ancient Egyptian Anchors: new results from Wadi Gawasis," in Essam El-Saeed, El-Sayed Mahfuz and Abdel Monem Megahed, eds., *The Festschrift Volume: A Collection of Studies Presented to Prof. Abdel Monem Abdel Haleem Sayed on the Occasion of his 80th Birthday* (Alexandria, 2006), 139–62; Zazzaro and Abdel Maguid, in Fattovich and Bard, *Archaeogate* (2007), 33–34; Fattovich et al., *Archaeogate* (2009).

[81] Zazzaro, in Bard and Fattovich, *Harbor of the Pharaohs*, 158.

[82] Zazzaro, in Bard and Fattovich, *Harbor of the Pharaohs*, 153–60.

[83] Zazzaro, "Cordage," in Bard and Fattovich, *Harbor of the Pharaohs*, 190–95; Chiara Zazzaro and André J. Veldmeijer, "Cordage," in Bard and Fattovich, *Archaeogate* (2008), 41–43; Veldmeijer, "Ropes," in Fattovich and Bard, *Archaeogate* (2007), 34–35; Veldmeijer and Zazzaro, "The Rope Cave at Mersa Gawasis: a Preliminary Report," *Antiguo Oriente* 5 (2007), 243–47; Veldmeijer and Zazzaro, "The Rope Cave at Mersa/Wadi Gawasis," *JARCE* 44 (2008), 23–37.

[84] Zazzaro and Manzo, "Wooden Artifacts," in Bard and Fattovich, *Harbor of the Pharaohs*, 165–68; Manzo, "Wooden boxes," in Fattovich and Bard, *Archaeogate* (2007), 30.

[85] Mahfuz, "Inscribed box," in Bard and Fattovich, *Harbor of the Pharaohs*, 238. Mahfuz and Pirelli, "Epigraphy," in Fattovich and Bard, *Archaeogate* (2007), 47–48.

[86] Andrea Manzo and Rosanna Pirelli, "The sealings from Marsa Gawasis: preliminary considerations on the administration of the port," in El-Saeed, Mahfuz and Megahed, *The Festschrift Volume*, 40–100; Manzo and Pirelli, "Sealings," in Bard and Fattovich, *Harbor of the Pharaohs*, 232–37; Manzo, "WG 32," in Fattovich and Bard, *Archaeogate* (2007), 18–19; Manzo, "Sealings and seal," in Bard and Fattovich, *Archaeogate* (2010), 26–27.

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Two more stelae were recorded on the top of the terrace and in the central sector of the site.[87] The stelae are either rectangular in shape or with a rounded top, and range between 72 cm × 74 cm × 10 cm, and 10.5 cm × 8.6 cm × 5 cm in size. The smallest stelae were never inscribed, suggesting that they were carried as blanks from the Nile Valley.[88]

Ten stelae (excavated by Sayed in the 1970s and by the UNO/IsIAO and BU expedition) still preserved some evidence of the original inscriptions. Several of these stelae mention the toponyms Bia-Punt, God's Land, and/or Punt, with dedications mainly to Min of Coptos. Three stelae were inscribed with the offering formula. Only Stela 5 was very well preserved, recording an expedition(s) to Punt and Bia-Punt during the reign of Amenemhat III. Six inscribed stelae (including Stela 5) record the names of Senusret II, Senusret III or Amemenhat III, supporting the interpretation that the area in front of the rock-cut galleries was mainly used in the late Twelfth Dynasty.[89]

Seventeen ostraca, including one with the name of Amenemhat III, two wooden tags, seven fragments of papyri and one inscribed cloth were excavated at Wadi Gawasis by our expedition. The ostraca mainly recorded quantities of food and ships. A fragment of a papyrus preserved a few lines of a private letter, suggesting that personal contacts were maintained (by courier?) between the officers of the expedition and people in the Nile valley.[90]

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Number of expeditions

At present, we do not know how many times Mersa/Wadi Gawasis was used as a harbor for seafaring expeditions in the Red Sea during the Twelfth Dynasty. A provisional estimate can be suggested based on the epigraphic evidence and the number of ceremonial monuments at the site.

The stelae, ostraca, and two cargo boxes record twelve or thirteen expeditions, which were organized during the reigns of Senusret I (Year 24), Amenemhat II (Year 28), Senusret II (Years 1 and 2), Senusret III (Year 5), Amenemhat III (Years 23 and 41), and Amenemhat IV (Year 8), as well as in the Years 4, 5, 6, 12, and 16 of the reigns of unknown kings.[91] There were possibly five more expeditions, if we take into account four stelae and one ostracon without the regnal year recorded for Senusret I (2 stelae) and Amenemhat III (2 stelae and 1 ostracon).[92] Two monumental stelae were also placed in two large niches above the entrance to Cave 4 and possibly recorded two more expeditions, but unfortunately one of them was completely eroded on its surface and the other one—if there was a second one—has not been found.[93]

[87] Bard and Fattovich *Harbor of the Pharaohs*, 58–60; Chen Sian Lim and Giuseppe Lebro, "WG 33," in Fattovich and Bard, *Archaeogate* (2007), 19–20; Rosanna Pirelli, "Attività commerciali e momenti di culto a Mersa Gawasis," in Sergio Pernigotti and Marco Zecchi, eds., *Sacerdozio e società civile nell'Egitto antico*, Bologna (2008), 13–29.

[88] Mahfouz and Pirelli, "Epigraphy," in Fattovich and Bard, *Archaeogate* (2007), 48.

[89] Mahfouz, Manzo, and Pirelli, in Bard and Fattovich, *Harbor of the Pharaohs*, 217–25; Mahfouz, "Les steles," in Bard and Fattovich, *Archaeogate* (2008), 30–33; Mahfouz, "Rapport épigraphique," in Bard and Fattovich, *Archaeogate* (2010), 27–30; Mahfouz and Pirelli, in Fattovich and Bard, *Archaeogate* (2007), 48–49; Pirelli, *RdÉ* 58 (2007); Pirelli, in Pernigotti and Zecchi, *Sacerdozio*.

[90] Mahfouz, "Ostraca," in Bard and Fattovich, *Harbor of the Pharaohs*, 225–32; Mahfouz, "Ostraca; Papyri et tissues," in Bard and Fattovich, *Archaeogate* (2008), 33–35; Mahfouz, "Papyri; Ostraca," in Bard and Fattovich, *Archaeogate* (2010), 30–31; Mahfouz, in Fattovich and Bard, *Archaeogate* (2007), 49.

[91] Sayed, "Discovery of the Site"; Sayed, "New Light on the Recently Discovered Port"; Nibbi, "Two Monuments from Mersa Gawasis"; Mahfouz, Manzo and Pirelli, in Bard and Fattovich, *Harbor of the Pharaohs*, 230–31, 238; Mahfouz and Pirelli, in Fattovich and Bard, *Archaeogate* (2007), 48–49; Mahfouz, in Bard and Fattovich, *Archaeogate* (2010), 28–30; Mahfouz, "Les ostraca hiératiques du Ouadi Gaouasis," *RdÉ* 59 (2008), 267–334. The expedition in the year of reign 5 of an unknown king might correspond to that in the year 5 of Senusret III.

[92] Sayed, "Discovery of the Site"; Mahfouz, Manzo, and Pirelli, in Bard and Fattovich, *Harbor of the Pharaohs*, 219–25; Mahfouz, "Les ostraca hiératiques du Ouadi Gaouasis," 267–334.

[93] Siam Lin and Lebro, in Fattovich and Bard, *Archaeogate* (2007), 19–20.

The number of ceremonial monuments along the edge of the coral terrace at Mersa and Wadi Gawasis may correspond to the total number of expeditions—sixteen, if these structures were built as a kind of memorial monument after each expedition. It is possible, however, that the platform (Feature 1) and a roughly circular enclosure (Feature 4) at Mersa Gawasis were used by several expeditions. The occurrence of about 700 conch shells (*Lambis* sp.) on the top of the platform suggests that this monument was repeatedly used for ritual offerings.[94] Six small limestone stelae associated with the circular enclosure suggest that this feature was a small shrine rather than the memorial monument of one expedition.[95]

Three monuments show evidence of different phases of construction, suggesting that each one was built for one expedition and was later restored or reconstructed by another expedition. A mound of coral rocks and conglomerate slabs (Feature 7) at the southeastern corner of the terrace at Mersa Gawasis originally was a rectangular construction, which was later incorporated into a horse-shoe shaped structure. At least two phases of use of the horse-shoe shaped structure could be recognized. These phases are represented by two living floors associated with large fragments of limestone anchors. Two hearths were also associated with the upper floor.[96]

Two possible phases of use and/or reconstruction were recognized in a circular mound of coral rocks mixed with soft sand, wood, and branches (WG 8), 4.5 m in diameter and 0.7–0.8 m high, at the southwestern corner of the terrace at Wadi Gawasis.[97] The earlier phase of use consisted of the lower part of the tumulus with a deposit of sand mixed with leaves and small branches and a thick layer of burned soil with many potsherds and charcoal above the bedrock. The later phase consisted of a floor on which the upper part of the structure was built. The ceramics were early Twelfth Dynasty in date.

Two phases of construction have also been identified in the tumulus structure (WG 3/6), about 8.0–9.0 m in diameter, where the stela of Intef-ikr was discovered, at Wadi Gawasis.[98] This was a roughly circular arrangement of fossil coral rocks, with an elongated pit, about 3.0 × 1.5 m in area, and four very shallow circular pits, about 0.4–1.0 m in diameter, in the center. Despite the poor preservation of the circular structure, two phases of use, which were separated by a stratum of sterile sand, could be identified. The earlier phase consisted of a stratum of sand with a well preserved, elongated pile of leaves and branches above the bedrock. This stratum was associated with small pieces of fossil coral and cordage. The pile of leaves and branches, ca. 2.80 m long and 70–90 cm wide, had an irregular S-shape with rounded edges, and was associated with many potsherds and pieces of cordage. The later phase consisted of the remains of the tumulus, a floor of compact sand associated with potsherds, cordage, and some coral rocks, and possibly the shallow pits. The ceramics associated with both phases date to the early Twelfth Dynasty.

The stone tumulus (WG 3/6) with the inscription of Intef-Ikr and the shrine of Ankhu represent either two different expeditions or one expedition (in which both officials participated) during the reign of Senusret I. On the whole, the epigraphic and archaeological evidence seem to be consistent in terms of the number of expeditions, suggesting that the harbor was used in the Middle Kingdom for fifteen to twenty expeditions.

[94] Carannante, in Bard and Fattovich, *Archaeogate*, 2008, 12–14.

[95] Sayed, "Discovery of the Site," map 3, pl. 12 c.

[96] Fattovich et al., *Archaeogate* (2009).

[97] Bard and Fattovich, *Harbor of the Pharaohs*, 48–49. This monument was also excavated by Sayed; see Sayed, "Discovery of the Site," map 3.

[98] Bard and Fattovich, *Harbor of the Pharaohs*, 45–47. See Sayed, "Discovery of the Site," map 3, pl. 15 d, e, f. Most likely the stela was originally placed in the rectangular pit in the center of the tumulus.

Organization of the expeditions

In the Middle Kingdom seafaring expeditions in the Red Sea and eastern Mediterranean were major state operations.[99] At Mersa/Wadi Gawasis the epigraphic and archaeological evidence suggests that implementation of these expeditions required a great number of men together with sophisticated logistical and administrative support. The expeditions functioned through the administrative bureaucracy of the state and kingship.[100]

The inscribed stelae of Intef-iker and Ankhu at Wadi Gawasis record 3,756 and 400 members, respectively, during the reign of Senusret I. The inscription of Intef-iker, also records the construction of the ships at the shipyard in Coptos and thus suggests that they were dismantled and carried to the Red Sea coast, where the ships were re-assembled and launched at Wadi Gawasis.[101]

The archaeological record suggests that a few hundred people—at the most—may have occupied the harbor during each expedition, but no evidence of large camps has been found. Most likely, after a seafaring expedition was launched most of the workers were sent to mines and quarries in the central Eastern Desert, and/or returned to the Nile Valley.[102] In such a case, if we suggest that the inscribed stelae of Intef-iker and Ankhu record the numbers of one expedition: 3,700+ men who carried the dismantled ships, supplies and equipment to Wadi Gawasis and only 400 men who formed the actual crew of the seafaring ships—but even these numbers seem high for different aspects of an expedition.

Some workers may have returned to the harbor at the end of a seafaring expedition (after a set period of time) in order to transport the imported materials to the Nile Valley. Donkeys were used as beasts of burden, as the lower jaws of several donkeys and donkey dung have been excavated at Wadi Gawasis.[103]

Light shelters, dating to the early Twelfth Dynasty, were erected in the northern and central sector of the site behind the shrine of Anhku, where concentrations of potsherds are visible on the surface in areas which were not destroyed by the construction of the railway.[104] The excavation of one of these assemblages (WG 2) suggested that the shelters were made with mats supported by wooden poles, about 5–6 cm to less than 1 cm in diameter, and were set up in camps of about 100 sq. m.[105]

Twenty-four shallow pits, about 2.3–2.8 m in diameter and 10–50 cm deep, sometimes with postholes and hearths, may have been the foundations of small huts or tents on the top of the western terrace at Wadi Gawasis. Assuming that 2 men could sleep in a tent, these features may have lodged 40–50 men, about the same number as mentioned on the stela of Intef-iker: fifty "Followers of the King."[106] Possibly these features were used by a "company" of forty to fifty Pan-Grave/*Medjaw* soldiers,[107] as they are similar to Nubian huts that date from Mesolithic times onward.[108] The occurrence of Egyptian

[99] See Ezra S. Marcus, "Amenemhat II and the Sea: Maritime Aspects of the Mit Rahina (Memphis) Inscription," *ÄL*, 17 (2007), 137–90.

[100] Bard and Fattovich, *Harbor of the Pharaohs*, 239–53.

[101] Sayed, "Discovery of the Site," 160, 170.

[102] Sayed, "The Land of Punt," 436–37. There is actually evidence of a sporadic gold mining activity in the Eastern Desert during the Middle Kingdom; Klemm, Klemm and Murr, in Friedman, *Egypt and Nubia*, 216.

[103] Fattovich and Ledesma, in Bard and Fattovich, *Archaeogate* (2010), 8–9.

[104] Bard and Fattovich, *Harbor of the Pharaohs*, 32.

[105] Bard and Fattovich, *Harbor of the Pharaohs*, 45.

[106] Sayed, "Discovery of the Site," 170.

[107] Alan Schulman, "Army," in Kathryn A. Bard, ed., *Encyclopedia of the Archaeology of Ancient Egypt* (London, 1999), 145–47.

[108] Andrea Manzo, "Typological and Functional Remarks on Some Structures at Mersa Gawasis (Red Sea, Egypt), paper delivered at the *First Conference of the Associazione Napoletana di Studi Egittologici*, Naples, July 22, 2008.

bowls with decoration imitating Nubian motifs actually suggests the presence of *Medjaw* soldiers at the site.[109]

A camp with hearths over 2 m in diameter and evidence of food remains, dating to the late Twelfth Dynasty (to early Thirteenth Dynasty?), was located on the shore of the harbor area over an estimated area of approximately 0.5 ha.[110] It is also possible that men were sleeping close to hearths associated with activity areas along the base of the western slope of the terrace at Wadi Gawasis over an area of about 600 sq. m.[111]

Some galleries at Wadi Gawasis (Cave 2, Cave 3, and Cave 4a/4b) were also used as shelters, as can be inferred from the occurrence of hearths, domestic pots, bread molds and fish bones inside.[112] The rock-cut galleries, however, were mainly used as long-term storerooms for heavy equipment, as the discovery of the well preserved coils of ropes in Cave 5 has demonstrated.[113] The rock-cut chambers (Cave 1 and Cave 8) were also storerooms, as they were originally sealed off with mud-bricks to protect what was stored inside.[114]

The stelae and ostraca from Mersa/Wadi Gawasis provide a limited amount of information about the "chain of command" in these expeditions, which involved a complex hierarchy of officials.[115] At the top was the pharaoh who formally ordered the seafaring expedition and appointed high status officials, such as the vizier Intef-iker, to organize the expedition. Middle rank officials, such as Ankhu, "overseer of the audience chamber," or the "chief steward" Senbef, supervised the organization of the expedition in the Nile valley.[116] Lower status officials, such as the "reporter/herald" Ameni, the "interior-overseer of the Head of the South" Nebsu, and the "scribe responsible for the seal of the treasury" Amenhotep, personally directed the expeditions (or parts of the expeditions).[117] Several functionaries were also charged with specific administrative commissions.[118]

The numerous broken clay sealings at Mersa/Wadi Gawasis confirm that the Egyptian seafaring expeditions required a great deal of administrative organization. The sealings were used for the management of expedition supplies and the administrative control of imported goods.[119] Ostraca and wooden tags with texts, often of uncertain reading, are another form of evidence of administrative activities at the site. In at least one case (Ostracon WG 105) a ration of meat for a group of workers is recorded.[120]

No information about the number and organization of the crews of the ships has been found at Mersa/Wadi Gawasis. The discovery of the blades of two different steering oars (1.75/2.0 m and 3.25/4.2 m in length, respectively) points to the use of large (and very large) ships in these expeditions, with a possible crew of 30 to 60 men.[121] This might support the statement in the "Tale of the Ship-

[109] Andrea Manzo, "Exotic ceramics," in Bard and Fattovich, *Harbor of the Pharaohs*, 131–32.

[110] Kathryn A. Bard, Rodolfo Fattovich, Ilaria Incordino and Tracy Spurrier, "Southern Terrace Slope," in Bard and Fattovich, *Archaeogate* (2008), 25–29.

[111] Ward, *personal communication*, January, 2011.

[112] Bard and Fattovich, *Harbor of the Pharaohs*, 66–67; Calcagno and Zazzaro, in Fattovich and Bard, *Archaeogate* (2007), 20–22.

[113] Bard and Fattovich, *Harbor of the Pharaohs*, 67, 194–95.

[114] Bard and Fattovich, *Harbor of the Pharaohs*, 70; Bard and Fattovich, *Archaeogate* (2010), 10.

[115] See Wolfram Grajetzki, *Court Officials of the Egyptian Middle Kingdom* (London, 2009).

[116] Pirelli, "Two New Stelae."

[117] Pirelli, "Two New Stelae."

[118] Sayed, "Discovery of the Site," 170; Mahfouz, in Bard and Fattovich, *Harbor of the Pharaohs*, 238; Mahfouz and Pirelli, in Fattovich and Bard, *Archaeogate* (2007), 47; Mahfouz, Mahfouz, "Les ostraca hiératiques du Ouadi Gaouasis."

Ed: "Mahfouz, Mahfouz" correct?

[119] Manzo and Pirelli, in El-Saeed, Mahfuz and Megahed, *The Festschrift Volume*, 40–100; Manzo and Pirelli, in Bard and Fattovich, *Harbor of the Pharaohs*, 232–37; Manzo, in Fattovich and Bard, *Archaeogate* (2007), 18–19; Manzo, in Bard and Fattovich, *Archaeogate* (2010), 26–27; Pirelli, in Pernigotti and Zecchi, *Sacerdozio*, 14–16.

[120] Mahfouz, Manzo, and Pirelli, in Bard and Fattovich, *Harbor of the Pharaohs*, 229–30.

[121] Zazzaro, "Ship blades," in Bard and Fattovich, *Harbor of the Pharaohs*, 150–53; Ward and Zazzaro, in Bard and Fattovich, *Archaeogate* (2010), 34; Ward, *JAEI* 2:3 (2010); Chiara Zazzaro and Mohamed M. Abdel Maguid, "Super-Sized Egyptian Ships," *IJNA*, forthcoming.

wrecked Sailor" that ships up to about 60 m (120 cubits) long and 20 m (40 cubits) wide with a crew of 120 men were used.[122]

The discovery of about fifty shallow bowls with pot marks (single or multiple "commas"), ca. 16–19 cm in diameter, carefully piled and covered with a linen cloth at the entrance of Cave 6,[123] is possible evidence that gangs of 50 workers or sailors were employed, as these vessels might have been ration bowls.[124] Several fragments of Canaanite ceramics from different assemblages at Wadi Gawasis possibly suggest that Levantine workers and/or sailors participated in the expeditions in Twelfth Dynasty.[125]

Fresh water and food provisioning were the main logistical problems the Egyptians had to solve at Mersa/Wadi Gawasis. A great amount of "*zir*" rim fragments from bag-shaped jars in all investigated areas points to water storage at the site.[126] Most likely, fresh water was obtained by excavating wells/holes in the wadi or from a spring at Bir Umm Al-Huwaytat along the Wadi Gasus, where a Roman station with evidence of an excavated well was found.[127]

The occurrence of emmer wheat and barley brought from the Nile valley,[128] as well as grinding stones, cylindrical bread molds, and a small conical beer jug at Wadi Gawasis suggests that bread and beer were made at the harbor, although no large ceramic vats for beer production have been found.[129] Two ovens were excavated along the western slope of the coral terrace and may have been used for baking bread in the long cylindrical bread molds,[130] as they are similar to an oven depicted in the Twelfth Dynasty tomb of Intef-iker.[131] The remains of insect pests associated with stored grains in Cave 3 indicate that pest infection was a risk for imported cereals of the expeditions.[132]

Mammal bones from the activity area at the base of the western slope of the coral terrace suggest that domestic and/or desert animals were consumed.[133] Fish bones, crab remains and shells associated with hearths and grinding stones in the beach area next to the harbor point to the exploitation of sea resources for food.[134]

Wood for fuel was another crucial problem at Wadi Gawasis. Charcoal samples included wood from many different regions: southwest Asia (cedar, pine, and two species of oak), the Nile Valley, and the southern Red Sea region (ebony), demonstrating that valuable imported woods were used in these fires, probably when they were in such small pieces that they could not be used for anything else.[135]

[122] Gustave Lefebvre, Romans et contes égyptiens de l'époque pharaonique, Paris (1982), 29–40.

[123] Perlingieri, in Fattovich and Bard, *Archaeogate* (2007), 28; Wallace-Jones, in Bard and Fattovich, *Archaeogate* (2008), 45.

[124] See Barry J. Kemp, *Ancient Egypt. Anatomy of a Civilization*, 2nd edition, London (2006), 171–79. These bowls could have also been used as lids; see Dorothea Arnold, "The Pottery," in D. Arnold, ed., *The Pyramid of Senwosret I, The South Cemeteries of Lisht*, Vol. I (New York, 1988), 110. This interpretation is not in conflict with use of the bowls as ration bowls, as they could have been reused in such a way at the end of the working activity in other sites in the Nile Valley.

[125] Wallace-Jones, in Bard and Fattovich, *Archaeogate* (2010), 23.

[126] Perlingieri, in Bard and Fattovich, *Harbor of the Pharaohs*, 104–5; Wallace-Jones, in Bard and Fattovich, *Archaeogate* (2008), 43–49.

[127] Sayed, "Discovery of the Site," 141–46.

[128] Ksenija Borojevic, "Archaeobotany," in Fattovich and Bard, *Archaeogate* (2007), 39–43; Borojevic, "Seeds," in Bard and Fattovich, *Archaeogate* (2008), 72; Borojevic, "Plant remains," in Bard and Fattovich, Archaeogate (2010), 47–51. The environmental conditions of the harbor most likely prevented the cultivation of these cereals at the site.

[129] Bard and Fattovich, *Harbor of the Pharaohs*, 73–76, 109; Bard and Fattovich, *Archaeogate* (2008), 55; Fattovich and Bard, *Archaeogate* (2007), 23–25.

[130] Bard and Fattovich, *Harbor of the Pharaohs*, 69.

[131] Norman de Garis Davies, *The Tomb of Antefoker, Vizier of Sesostris I, and His Wife Senet*, London (1920), Pl. 11b.

[132] Ksenija Borojevic, Warren E. Steiner Jr., Rainer Gerisch, Chiara Zazzaro, and Cheryl Ward, "Pests in an ancient Egyptian Arbor," *JAS* 30 (2010), 1–10.

[133] Fattovich and Bard, *Archaeogate* (2007), 24.

[134] Bard and Fattovich, *Harbor of the Pharaohs*, 211; Bard and Fattovich, *Archaeogate* (2008), 26.

[135] Gerisch, in Bard and Fattovich, *Harbor of the Pharaohs*, 170–85; Gerisch, in Bard and Fattovich, *Archaeogate* (2008), 70–72; Gerisch, in Bard and Fattovich, *Archaeogate* (2010), 56–57; Gerisch, in Fattovich and Bard, *Archaeogate* (2007), 43–45.

Most expedition equipment was carried to the harbor site from the Nile Valley, including the (dismantled) ships with timbers or components of cedar (*Cedrus libani*, originating in Lebanon), acacia (*Acacia nilotica*) and sycamore (*Ficus sycomorus*).[136] Most of the ceramics with fabrics of Nile alluvium and Marl clay, including hundreds of storage jars, were also transported from the Valley. The ceramics are of wares made in different areas of the Nile Valley as well as in the eastern Nile Delta.[137] Also brought imported to the site was a large granite stela found in front of the entrance to Cave 4, which must have been quarried elsewhere and was also brought some distance across the desert to the harbor.

The excavated evidence at the harbor facilities is mainly from the aftermath of expeditions, especially carpentry. Ship timbers were salvaged by carpenters to remove areas damaged by shipworms, as the large amounts of gribble in the entrances of Caves 2, 3 and 7 demonstrate.[138] Some large timbers were abandoned outside the rock-cut galleries; others were used to construct ramps or storage containers. But well preserved ship timbers were probably carried back to the Nile Valley, as they have not been found at the site.

Some of the long cylindrical bread molds and large chaff-tempered ceramic platters of uncertain use (possibly for baking flat bread) were made at the site, as both types of artifacts are made of local clay.[139] A great quantity of lithic debitage demonstrates that stone tools for multiple use were also made at the site.[140]

A number of unfinished limestone anchors suggests that some of them were made in the harbor area.[141] It has been suggested that the ship ropes found in Cave 5 were manufactured at the harbor as well, using a local grass.[142] But there is no evidence of their manufacture at Mersa/Wadi Gawasis,[143] and the most recent analysis of the material for all of these ropes identifies the fiber as papyrus from the Nile Valley.[144]

Ideology and ritual activities

Ceremonial structures along the edge of the coral terrace and stelae placed in niches outside gallery entrances demonstrate that rituals were performed at the harbor before the departure and/or after the return of the ships in the 12th Dynasty.

[136] Gerisch, in Bard and Fattovich, *Harbor of the Pharaohs*, 185–88; Gerisch, in Bard and Fattovich, *Archaeogate* (2008), 70–72; Gerisch, in Bard and Fattovich, *Archaeogate* (2010), 51–55; Gerisch, in Fattovich and Bard, *Archaeogate* (2007), 43–45.

[137] Perlingieri, in Bard and Fattovich, *Harbor of the Pharaohs*, 102–4; Perlingieri, in Fattovich and Bard, *Archaeogate* (2007), 27–29; Wallace-Jones, in Bard and Fattovich, *Archaeogate* (2008), 43–49; Wallace-Jones, in Bard and Fattovich, *Archaeogate* (2010), 17–22.

[138] Bard and Fattovich, *Harbor of the Pharaohs*, 66; Bard and Fattovich, *Archaeogate* (2008), 25; Fattovich and Bard, *Archaeogate* (2007), 20–23.

[139] Perlingieri, in Bard and Fattovich, *Harbor of the Pharaohs*, 107–10. A deposit of clay is located at about 2 km from the harbor along the Wadi Gawasis (Trina Arpin, *personal communication*, January, 2005). But according to Sally Wallace-Jones, forthcoming 2011: "Even the tubular bread moulds which are present in considerable quantity on the site appear to be made in a technique and from a material very similar to that found in the Nile Valley and although it seems unlikely they may well also have been brought into the site. . . . However, there are also many examples of tubular bread moulds from the site which are made in a coarse, sandy, low fired clay and which often lack the lining of fine clay slip." These coarse ware bread molds were probably made at the harbor site.

[140] Giulio Lucarini, "Lithics and grinding stones," in Bard and Fattovich, *Harbor of the Pharaohs*, 196–212; Lucarini, "Stone assemblage," in Bard and Fattovich, *Archaeogate* (2008), 52–64; Lucarini, "Stone assemblage," in Fattovich and Bard, *Archaeogate* (2007), 35–37.

[141] Zazzaro, in Bard and Fattovich, *Harbor of the Pharaohs*, 155.

[142] Veldmeijer and Zazzaro, "The Rope Cave," 23–37.

[143] See J. Bohr and K. Olsen, "The ancient art of laying rope," *EPL* 93 (2011) 60004, 1–5. *Ed*: caps needed?

[144] Ksenija Borojevic and Rebecca Mountain, "Ancient Egyptian Plant Fibers: Microscopic Identification and Sourcing," forthcoming.

Epigraphic evidence indicates that Min of Coptos was the main focus of cult activity at Mersa/Wadi Gawasis.[145] A small (badly preserved) stela (Stela 28) records offerings to Wsir Wadj-wr (Osiris of the Great Green/Sea) and *Ḥr-wr* (Horus the Great), suggesting that a maritime form of Osiris as well as Horus were also honored at the harbor.[146]

A stela, dating to Year 2 of Senusret II, records a temple of Min, which might have been located at Mersa/Wadi Gawasis,[147] but no evidence of such a construction has been found at the site.[148] An oval platform, ca. 9 m × 10 m in area and ca. 1.2 m high, with an east-west orientation and a ramp to the west (Feature 1), [149] at Mersa Gawasis may have been an open air altar for offerings to a maritime deity, most likely Min, as several hundred conch shells like those carved on the Protodynastic colossal statues of this god from Coptos were collected on top of it.[150] These conch shells were not used to make artifacts or for food, but most of them were collected already dead and therefore their placement on top of this platform most likely had a ritual meaning.[151]

Another roughly circular enclosure (Feature 4), ca. 12 m × 10 m in area, with an opening to the east and a horseshoe-shaped stone arrangement inside, ca. 1.0 m × 1.2 m in area, was built at Mersa Gawasis.[152] This structure is similar to a Middle Kingdom shrine of Hathor in the galena mining village at Gebel Zeit in the Eastern Desert.[153] This goddess may also have been worshipped at the harbor and the inscription on the stela of Ankhu, found by Sayed at the site, mentions "Hathor, Lady of Punt."[154]

Over thirty stelae which were in the niches carved on the western wall of the coral terrace suggest that in the late Twelfth Dynasty the core area of cult activity moved from the edge of the sea at Mersa Gawasis to the western slope of the coral terrace at Wadi Gawasis.[155] These stelae were probably associated with a small ceremonial structure consisting of four upright boulders, next to the entrance to Cave 7, and with a large curved wall cut into a natural stratum of cobbles at the top of the southwestern slope of the coral terrace (WG 56). A well preserved ceramic jar, missing only its neck, was also associated with this structure and was probably some kind of offering.[156] A few Minoan potsherds were also collected close to this structure, and might have been highly valued items, possibly brought to the site as offerings.[157]

The stelae record seafaring expeditions, offerings to the gods, as well as ones which contain offering scenes and the offering formula.[158] These stelae, including royal and non-royal commemorative

[145] Mahfouz, Manzo, and Pirelli, in Bard and Fattovich, *Harbor of the Pharaohs*, 219–25; Mahfouz, in Bard and Fattovich, *Archaeogate* (2008), 30–31; Mahfouz, in Bard and Fattovich, *Archaeogate* (2010), 28–30.

[146] Mahfouz, in Bard and Fattovich, *Archaeogate* (2008), 32–33.

[147] Mahfouz, in Bard and Fattovich, *Archaeogate* (2010), 28–30.

[148] The remote sensing analysis of the satellite image (Quickbird) was conducted by Armando De Guio, University of Padua (Italy), in 2009. This analysis showed possible constructions in the central sector of the site, but test excavations in this area in 2009–2010 did not confirm their existence.

[149] Bard and Fattovich, *Harbor of the Pharaohs*, 43–44

[150] See Barry J. Kemp, "The Colossi from the early shrine at Coptos in Egypt," *CAJ* 10 (2000), 211–42.

[151] Carannante, in Fattovich and Bard, *Archaeogate* (2007), 11; Carannante, in Bard and Fattovich, *Archaeogate* (2008), 13–14.

[152] Bard and Fattovich, *Harbor of the Pharaohs*, 41–42.

[153] G. Castel, J. Gout, and G. Soukassian, "Fouilles de Gebel Zeit (Mer Rouge). Première et deuxième campagnes (1982–83)," *ASAE* 70 (1984–1985), 99–105; Castel and Soukassian, "Les mines de galena du Gebel Zeit," in S. Schoske, ed., *Akten des Vierten Internationalen Ägyptologen Kongresses München 1985*, Vol. 2 (Hamburg, 1989), 161–70.

[154] Sayed, "Discovery of the Site," 159.

[155] Pirelli, in Pernigotti and Zecchi, *Sacerdozio*, 13–29.

[156] Bard and Fattovich, *Archaeogate* (2008), 22–25.

[157] Wallace-Jones, in Bard and Fattovich, *Archaeogate* (2010), 23–24.

[158] Mahfouz, Manzo, and Pirelli, in Bard and Fattovich, *Harbor of the Pharaohs*, 217–25; Mahfouz, in Bard and Fattovich, *Archaeogate* (2008), 30–33; Mahfouz, in Bard and Fattovich, *Archaeogate* (2010), 27–31; Mahfouz and Pirelli, in Fattovich and Bard, *Archaeogate* (2007), 48–49.

inscriptions, might be interpreted as "monumental discourse," addressed to posterity as well as an audience of viewers and listeners in order to create a sacred dimension of permanence.[159]

The different mounds and stone circles at Mersa Gawasis, together with Ankhu's monument, probably had the same ideological purpose as the stelae, which were sometimes associated with them. The mounds were at the same time commemorative monuments and shrines, as the occurrence of stone anchors and conch shells in the foundations of the mounds suggests, and the orientation of the opening of chambers toward the sea points to symbolic behavior within a maritime context.[160]

Trade with Punt

Commercial use of the harbor

Since the discovery of the harbor site in the mid-1970s scholars assumed that Mersa/Wadi Gawasis was associated with the maritime trade to Punt, on the basis of the epigraphic evidence. The use of the harbor for seafaring expeditions to the land of Punt is also suggested by two stelae from Bir Umm Al-Huwaytat along the Wadi Gasus recording the "God's Land" (most likely corresponding to Punt) and Bia-Punt (the "mine" of Punt),[161] and from the harbor site three stelae recording Bia-Punt and one stela recording both Bia-Punt and Punt, as well as an ostracon with the name of Punt.[162] This textual evidence, however, is ambiguous and might point to the main use of the harbor for the exploitation of mines in a region (Bia-Punt) somewhere along or near the Red Sea rather than regular seafaring trade with Punt.

The only definitive, excavated evidence at the site of a commercial use of the harbor consists of over forty wooden cargo boxes from an expedition dating to Year 8 of Amenemhat IV, charcoal and four burnt sticks of ebony, and a few pieces of obsidian. The cargo boxes were carefully piled in the area outside Cave 6. They were predominantly made of sycamore wood and were originally covered with white plaster to protect the contents in the sea voyage. The boxes had been made in standardized sizes: nine boxes were 50–52 cm long, 32–34 cm wide, and 27–29 cm high; while four boxes were slightly smaller: 45–48 cm long, 30–34 cm wide, and 20 cm high.[163] Although the deposits in which the cargo boxes were found were carefully sieved, nothing remained of their contents. It is likely that their contents were carefully unloaded in this area into bags or other containers that were more easily transported by donkey caravan across the Eastern Desert to the Nile valley.

On the side of two boxes there was the same badly preserved inscription with four lines recording the "wonderful things of Punt" and the name of the royal scribe Djedy, together with the cartouche of Amenemhat IV and Year 8 of his reign.[164] These two inscriptions were a kind of package label recorded by the royal scribe Djedy, and the boxes contained whatever goods or materials were the "wonderful things of Punt"—goods/materials that were important enough to be labeled by the royal scribe. In our opinion, the most likely material that was brought to Egypt in these boxes was (frank)incense, one of the most desired materials from Punt, which was used in all temple ceremonies. The boxes had

[159] Jan Assmann, *The Mind of Egypt*, translated by A. Jenkins (New York, 1996); R. B. Parkinson *Poetry and Culture in Middle Kingdom Egypt. A Dark Side to Perfection* (London and New York, 2002), 62.

[160] Bard and Fattovich, *Harbor of the Pharaohs*, 40–44.

[161] PM *VII. Nubia, The Deserts, and Outside Egypt*, 338–39.

[162] Sayed, "Discovery of the Site"; Mahfouz, Manzo, and Pirelli, in Bard and Fattovich, *Harbor of the Pharaohs*, 219–21, 228–29.

[163] Manzo, in Fattovich and Bard, *Archaeogate* (2007), 30; Gerisch, in Bard and Fattovich, *Harbor of the Pharaohs*, 186.

[164] Mahfouz, "Inscribed box," in Bard and Fattovich, *Harbor of the Pharaohs*, 238; Mahfouz and Pirelli, in Fattovich and Bard, *Archaeogate* (2007), 47.

been covered with a layer of plaster—evidence that care had been taken with their contents. As far as we know, these cargo boxes are unique and have only been found at Mersa/Wadi Gawasis.

Several fragments of carbonized ebony wood (*Diospyros* sp.) have been found in the deposit in front of the galleries at Wadi Gawasis.[165] Ebony was certainly part of the ships' cargo as this wood had been imported to Egypt since the First Dynasty and was recorded among the products from Punt.[166] The discovery of four rod-like pieces of ebony (width/thickness: 1.3–1.9 cm/1.0–1.2 cm; 1.8–2.5 cm/0.7–11 cm; 1.3–1.9 cm/0.9–1.4 cm; 1.2–1.7 cm/0.8–1.0 cm) suggests that the wood was cut in this shape in Punt in order to be easily transported to Egypt.[167]

One obsidian scraper and four pieces of debitage have been collected at Wadi Gawasis,[168] as well as a blade found in 2009–2010. Obsidian had been imported to Egypt since Predynastic times,[169] and thus was probably part of the ships' cargo.

The archaeological evidence also suggests that others frequented Mersa/Wadi Gawasis and possibly traded there with the Egyptians, when they were at the site. The occurrence of Middle Nubian pottery at Mersa/Wadi Gawasis in assemblages dating to the early to mid-second millennium BC suggests that the harbor was frequented by peoples of Nubian cultures (perhaps local Eastern Desert peoples), either when the Egyptians were there and/or in their absence,[170] although it is also possible that the Nubian ceramics were part of the personal equipment of *Medjaw* soldiers who came with the Egyptians. An unidentified potsherd associated with evidence of shell working from a Middle Kingdom assemblage along the southern terrace slope (WG 18) is possible evidence that (so far unknown) coastal peoples were interacting with the Egyptians when they used the harbor site.[171]

Destination of the seafaring expeditions

The epigraphic evidence from Mersa/Wadi Gawasis records two destinations of the seafaring expeditions: Bia-Punt and Punt. Although Bia-Punt is usually considered a mining-region of Punt,[172] the inscription on Stela 5, dating to Amenemhat III, demonstrates they were separate regions, at least in the late Twelfth Dynasty.[173] Their location is still debated,[174] but the African coast and hinterland along the southern Red Sea in Sudan and Eritrea is the region better fitting the textual, iconographic and archaeological evidence we have about Punt.[175]

[165] Gerisch, in Bard and Fattovich, *Harbor of the Pharaohs*, 183–84; Gerisch, in Bard, and Fattovich, *Archaeogate* (2008), 71; Gerisch, in Bard and Fattovich, *Archaeogate* (2010), 56–57.

[166] Lucas, *Materials* (4th ed.), 434–36; Barbara G. Aston, James A. Harrell and Ian Shaw, "Stone," in Ian Shaw and Paul T. Nicholson, *Ancient Egyptian Materials and Technology* (Cambridge, 2000), 46–47; Manzo, *Echanges et contacts le long du Nil et de la Mer Rouge dans l'époque protohistorique (IIIe et IIe millénaires avant J.-C.)* (Oxford, 1999), 8.

[167] Gerisch, in Bard and Fattovich, *Archaeogate* (2010), 51–52, 56–57.

[168] Lucarini, in Bard and Fattovich, *Harbor of the Pharaohs*, 208; Lucarini, in Bard and Fattovich, *Archaeogate* (2008), 53, 61.

[169] Lucas, *Materials*, 415–16; Juris Zarins, "Ancient Egypt and the Red Sea Trade: the case for Obsidian in the Predynastic and Archaic Periods," in A. Leonard and Bruce B. Williams, eds., *Essays in Ancient Civilization Presented to Helene Kantor* (Chicago, 1989), 339–68; Aston, Harrell and Shaw, "Stone," in Shaw and Nicholson, *Ancient Egyptian Materials*, 46–47.

[170] Andrea Manzo, "Exotic ceramics," in Bard and Fattovich, *Harbor of the Pharaohs*, 126–30; Manzo, "Foreign ceramics," in Bard and Fattovich, *Archaeogate* (2008), 50–52; Manzo, "Nubian Pottery and Ceramics from Southern Regions of the Red Sea," in Bard and Fattovich, *Archaeogate* (2010), 25–26.

[171] Lucarini, in Bard and Fattovich, *Harbor of the Pharaohs*, 211.

[172] See, e.g., Kitchen, in Shaw, Sinclair, Andah, and Okpoko, *Archaeology of Africa*, 603; Stanley Balanda, "The So-Called 'Mine, of Punt' and Its Location," *JARCE* 42 (2005–2006), 33–44.

[173] Mahfouz, Manzo, and Pirtelli, in Bard and Fattovich, *Harbor of the Pharaohs*, 219–21; Pirelli, "Two New Stelae," 88–98.

[174] See Kitchen, in Shaw, Sinclair, Andah, and Okpoko, *Archaeology of Africa*, 587–608; Dimitri Meeks, "Locating Punt," in David O'Connor and Stephen Quirke, eds., *Mysterious Lands, Encounters with Ancient Egypt* (London, 2003), 53–80; Balanda, "The So-Called 'Mine of Punt'," 33–44.

[175] Kitchen, in Shaw, Sinclair, Andah, and Okpoko, *Archaeology of Africa*, 603–4; Kitchen, "The Elusive Land of Punt Revisited," in Paul Lunde and A. Porter, eds., *Trade and Travel in the Red Sea Region. Proceedings of Red Sea Project I* (Oxford, 2004), 25–31;

The archeological evidence at the harbor site confirms that the expeditions were navigating as far south as Eritrea and Yemen, and suggests that the communities settled along the coast and immediate hinterland of both sides of the southern Red Sea were in some way participating in Egyptian maritime trade in the nineteenth-eighteenth centuries BC. The foreign ceramics excavated at the site include fragments of Nubian ware from the region of the 4th Cataract in Sudan, Gash Group ware from the Sudanese-Eritrean borderland at Kassala, Ancient Ona ware and early Adulis ware from the Eritrean-Sudanese lowlands and Eritrea, Malayba ware from the Aden region of southern Yemen, and Sabir ware from the Yemeni Tihama. The fragments of Malayba ware, Gash Group ware, Ancient Ona ware, early Adulis ware and Nubian ware were found in assemblages dating to the late Twelfth Dynasty. A few fragments of Sabir ware were found in assemblages dating to the early New Kingdom.[176]

Raw materials found at the site also point to a southern location for Punt. African ebony (*Diospyros* sp.) could be obtained from the northwestern slopes of the highlands in Eritrea.[177] Obsidian occurs both on the coast at Adulis and the Danakil hinterland of Eritrea, and in Yemen.[178]

The occurrence of charcoal of red mangrove wood (*Rhizophora/Bruguiera* genus) in assemblages dating to the late Twelfth Dynasty at the harbor might also be evidence that the seafaring expeditions reached the coast of eastern Sudan and/or Eritrea. Today, the red mangrove (*Rhizophora mucronata*) grows over the whole coast of Sudan to the south of the border with Egypt, while the species *Bruguiera gymnorrhiza* occurs over the whole coast of eastern Africa.[179] We cannot exclude, however, the possibility that these species were growing closer to the site at the time of use of the harbor.

The best overlap of the area of distribution of ebony and gold sources in the Eritrean western lowlands and northern highlands,[180] together with the occurrence of potsherds at Mersa/Wadi Gawasis from the same region (Ancient Ona ware; Gash Group ware), suggests that Bia-Punt was located in present-day northern Eritrea. But the location of Punt is more ambiguous. The occurrence of Malayba potsherds at Mersa/Wadi Gawasis suggests a location in the coastal regions of southern Yemen, but this evidence is scant. Possibly in the second millennium BC there was an inter-regional trading circuit between the coastal regions of the southern Red Sea, in Eritrea and Yemen, which would support Fattovich's hypothesis that the Egyptians met South Arabs who frequented the African coast.[181] At present, however, we do not know if the Egyptians were navigating along both coasts of the northern Horn of Africa and western Arabia, and thus included regions on both sides of the Red Sea into their trading circuit, or met South Arabs on the African coast and engaged in exchange there.

Fattovich, "Punt: the archaeological perspective," *Beitrage zur Sudanforschung* 6 (1996), 15–29; Bard and Fattovich, "The Land of Punt and Recent Archaeological and Textual Evidence from the Pharaonic Harbor at Mersa/Wadi Gawasis, Egypt," in A. Costopoulos and S. Chrisomalis, eds., *Human Expeditions: Inspired by Bruce Trigger*, Toronto, University of Toronto Press, forthcoming.

[176] Manzo, in Bard and Fattovich, *Harbor of the Pharaohs*, 130–31; Manzo, in Bard and Fattovich, *Archaeogate* (2008), 51; Manzo, in Bard and Fattovich, *Archaeogate* (2010), 26; Manzo, in Fattovich and Bard, *Archaeogate* (2007), 29–30.

[177] Fattovich, "The Problem of Punt in the Light of Recent Field Work in the Eastern Sudan," in Sylvia Schoske, ed., *Akten des vierten internationalen ägyptologen Kongresses München 1985* (Hamburg, 1991), 257–72, fig. 1; Manzo, *Échanges et contacts*, 8, pl. 11.

[178] Manzo, *Échanges et contacts*, 8, pl. 11; Lamya Khalidi, "The Formation of a Southern Red Seascape in the Late Prehistoric Period: Tracing Cross-Red Sea Culture-Contact, Interaction, and Maritime Communities along the Tihāmah Coastal Plain, Yemen, in the Third to First Millennium BC," in Janet Starkey, Paul Starkey, and Tony Wilkinson, eds., *Natural Resources and Cultural Connections of the Red Sea* (Oxford, 2007), 35–43.

[179] Gerisch, in Bard and Fattovich, *Archaeogate* (2008), 70.

[180] Fattovich, in Schoske, *Akten*, fig. 1; Manzo, *Échanges et contacts*, 8–9, pls. 11–12.

[181] Fattovich, "The Afro-Arabian Circuit: Interregional Contacts between the Horn of Africa and Southern Arabia in the 3rd–2nd Millennia BC," in Lech Krzyzaniak, ed, *Interregional Contacts in the Later Prehistory of Northeastern Africa* (Poznan, 1996), 395–402; Fattovich, "The Southern Red Sea in the Third and Second Millennia BC: An Archaeological Overview," in Dionisius A. Agius, ed., *The Red Sea Project V: Navigated Spaces, Connected Places*, forthcoming; Nadia Durrani, *The Tihama Coastal Plain of South-West Arabia in its Regional Context, c. 6000 BC–AD 600* (Oxford, 2005); Khalidi, in Starkey, Starkey, and Wilkinson, *Natural Resources*, 35–73.

Conclusion

The results of the UNO/IsIAO and BU Archaeological Expedition at Mersa/Wadi Gawasis has confirmed the interpretation of A. M. A. H. Sayed in the mid-1970s—that this was the harbor for seafaring expeditions to the southern Red Sea in the Twelfth Dynasty. Scant evidence suggests that the site was already used in the late Old Kingdom (and/or First Intermediate Period). The discovery of the blades of a steering oar associated with ceramics dating to the (late Second Intermediate Period and/or) early Eighteenth Dynasty, suggests that the harbor was frequented at that time and indirectly supports the hypothesis that the Egyptians were navigating in the Red Sea at the time of Hatshepsut.

In the Twelfth Dynasty Egyptian ships were navigating to two different destinations: Bia-Punt and Punt. Most likely, both regions were located on the African side of the southern Red Sea. The harbor was finally abandoned in the later second millennium BC, when the lagoon was progressively filled with sediments and the present coast line was formed.

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