

SHAJ X 2009: 823-841, Rās al-Miyāh Fortresses
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 Figures (color version)

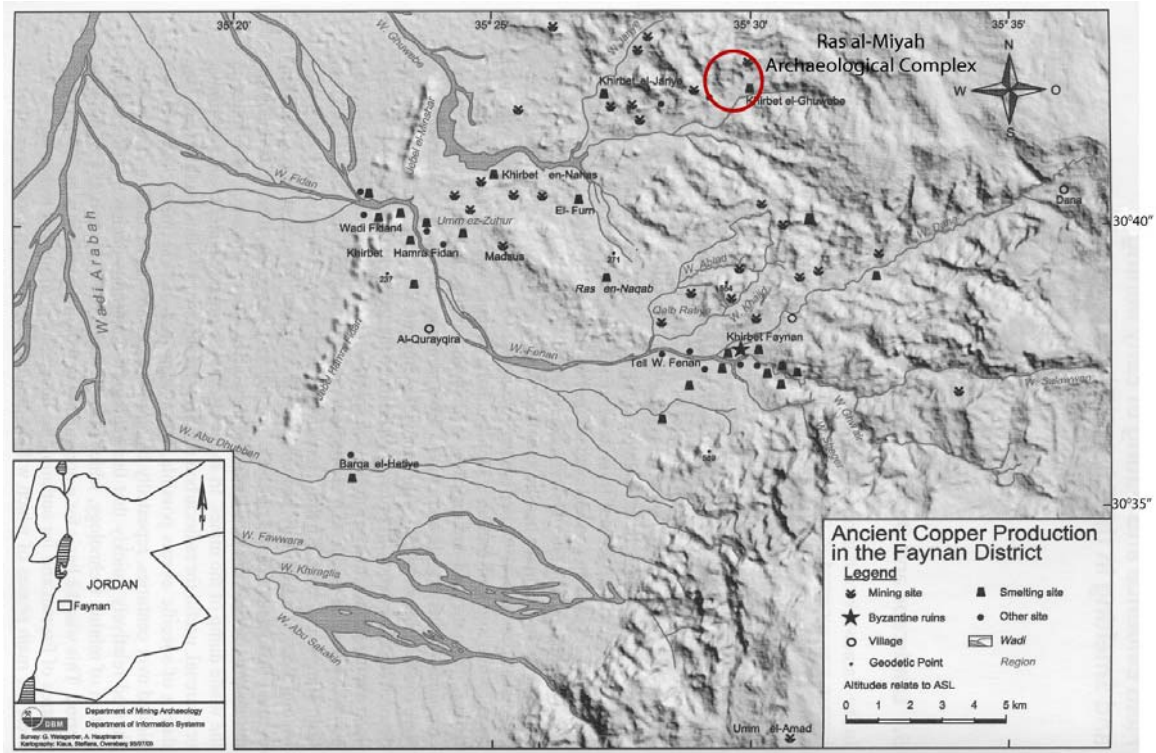


FIG.1: The copper production district of Faynan and the location of Rās al-Miyāh Archaeological Complex (after Hauptmann 2007:86 figure 5.1). Base map is republished by courtesy of A. Hauptmann.

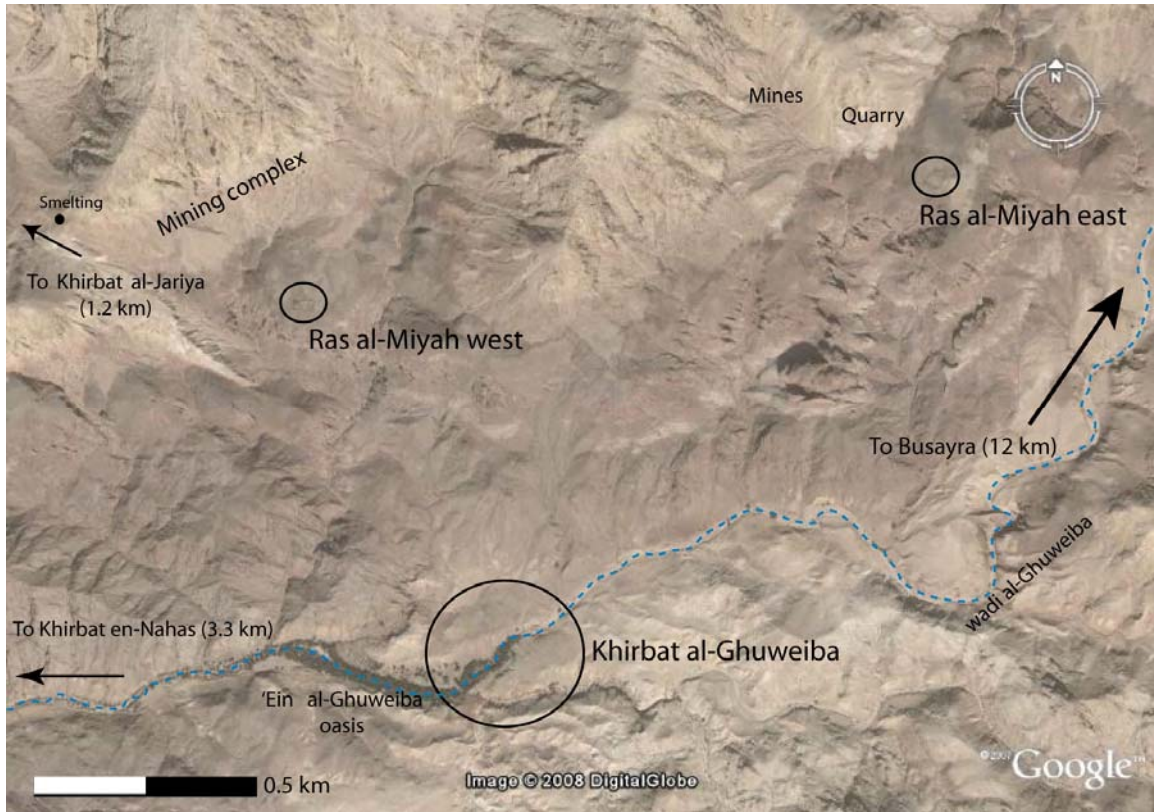


FIG.2: Rās al-Miyāh Archaeological Complex in the upper basin of Wadi al-Ghuwayba. The fortresses of *Rās al-Miyāh West* and *Rās al-Miyāh East*, as well as *Khirbat al-Ghuwayba*, are marked by black circles.

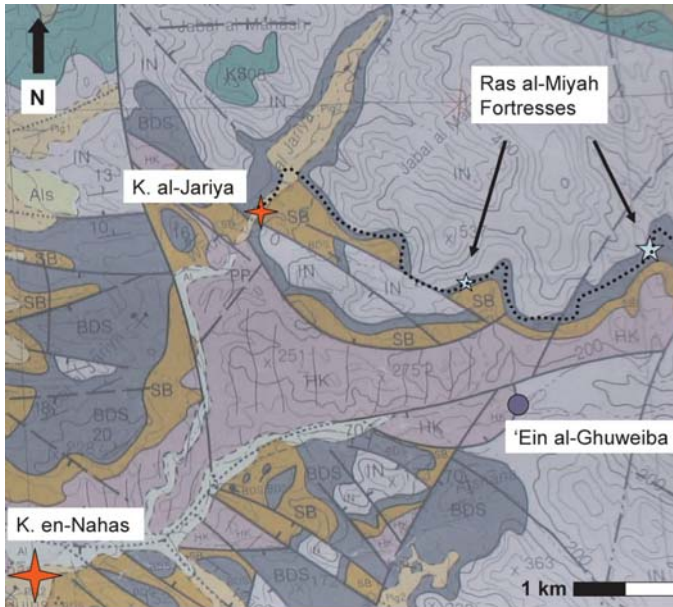


FIG.3: Geology map of Rās al-Miyāh Archaeological Complex (after Rabb'a 1994). HK= Hunayk Monzogranite; SB=Salib formation (arkosic sandstone); BDS=Burj formation (Dolomite-Shale); IN=Umm-Ishrin formation (sandstone). Note the location of the fortresses and the local trail which connects them on the narrow outcrop of Burj formation (see text).

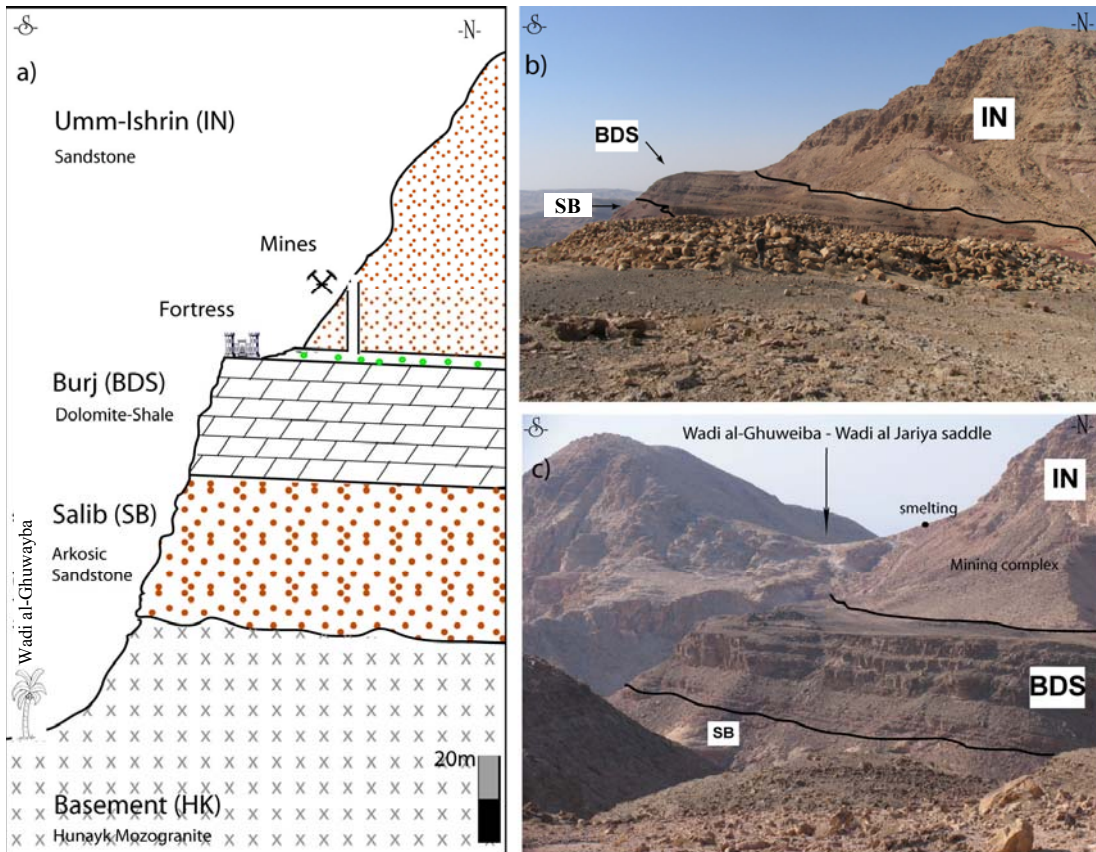


FIG.4: The geology of Rās al-Miyāh: a) a schematic section of the rock formations in the vicinity of the fortresses, looking west. Note the copper ore bearing horizon of Burj formation, the mining technique, involving shafts dug into the lower part of Umm-Ishrin formation and the topographic step caused by the erosion of the soft shale unit of Burj formation; b) *Rās al-Miyāh East* and the geological formations, looking west; and c) *Rās al-Miyāh West* and the geological formations, looking west.

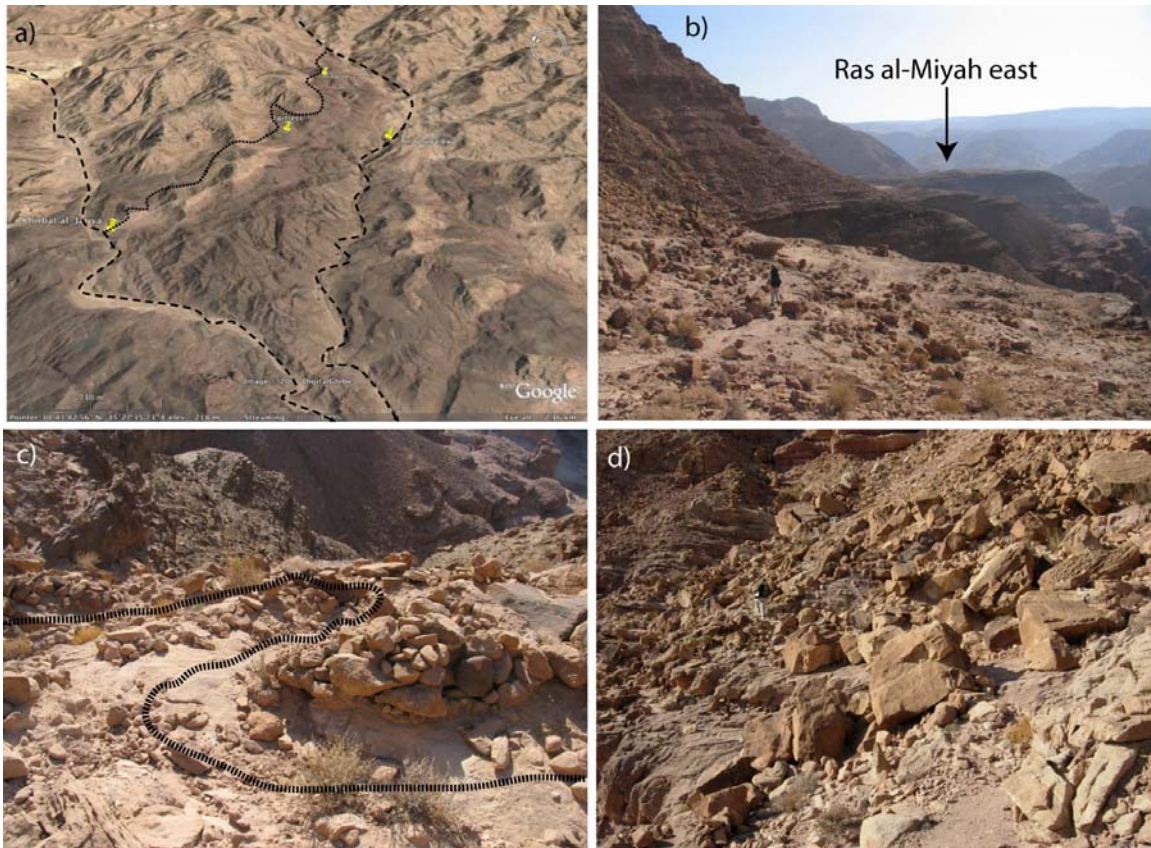


FIG.5: Local and principal trails in the area of Rās al-Miyāh: a) a multispectral tilted satellite image of upper Wadi al-Ghuwayba basin, looking to the northeast. The main road to Busayra passes through ‘Ein al-Ghuwayba and Wadi al-Ghuwayba; principal road to Wadi ed-Dahal passes through Khirbat al-Jariya and Wadi al-Jariya and a local road connects the two fortresses of Rās al-Miyāh with each other and with the basin of Wadi al-Jariya (image taken from GoogleEarth); b) the local trail connecting the two fortresses takes advantage of the topographic step of Burj formation (looking to the east). This trail has constructions, typically in difficult passages (c); and d) the boundary between the sandstone of Umm-Ishrin formation and the shale unit of Burj formation is sometimes covered by sandstone talus. For scale, note the individual walking along the trail.



FIG.6: The fortress of *Rās al-Miyāh West* (view towards the west).

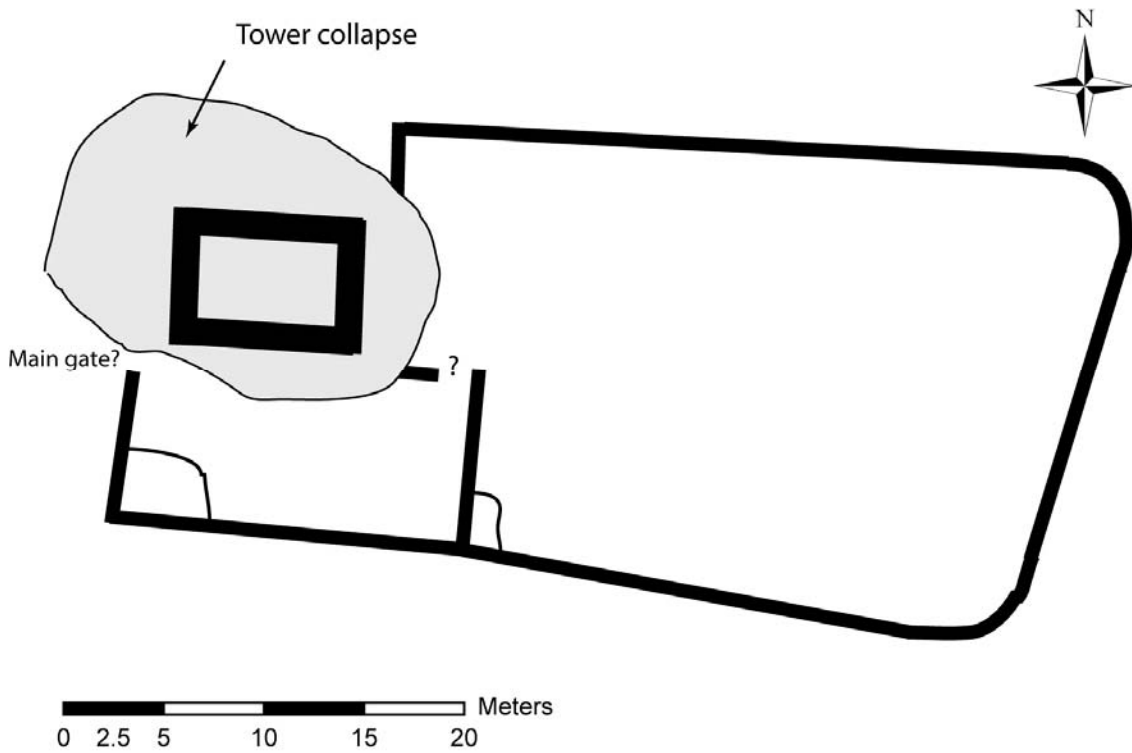


FIG.7: Wall plan of *Rās al-Miyāh West*. The width of the inner walls of the tower is approximate.

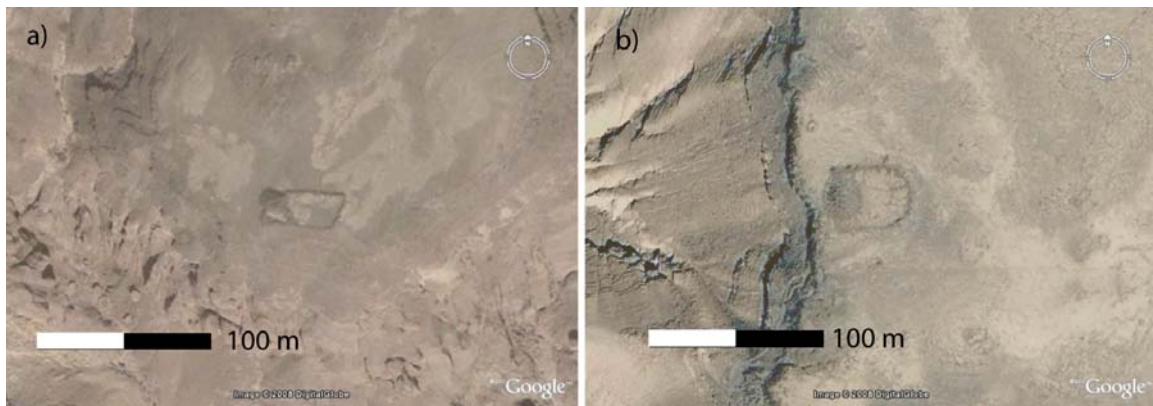


FIG.8: The Edomite Iron Age fortress of *Rās al-Miyāh West* (a) and the Moabite Iron Age fortress of Rujm al-Abed (b) show marked similarities in the architectural plan (images taken from GoogleEarth).



FIG.9: Archaeological features in the vicinity of *Rās al-Miyāh West*: a) small rectangular structure made of local dolomite stones; b) overview of the mining complex. Note the blackish color caused by tailings; c) horizontal line of niches, 10-15 cm in diameter, located above a blocked shaft in the mining complex. A similar feature was found in the quarry area near *Rās al-Miyāh East* (d); e) open mining shaft dug into the shale unit of Burj formation; f) and g) copper slag deposit located near the saddle between Wadi al-Jariya and Wadi al-Ghuwayba.



FIG.10: An overview of *Rās al-Miyāh East*, looking towards southeast. The fortress is located on the dark Burj formation plateau and built almost entirely of bright sandstone. Note some of the small structures on the plateau, and the arrangement of building stones in front of the northwestern wall of the fortress. The size of this fortress is indicated by the two people standing near the southern corner of the structure.

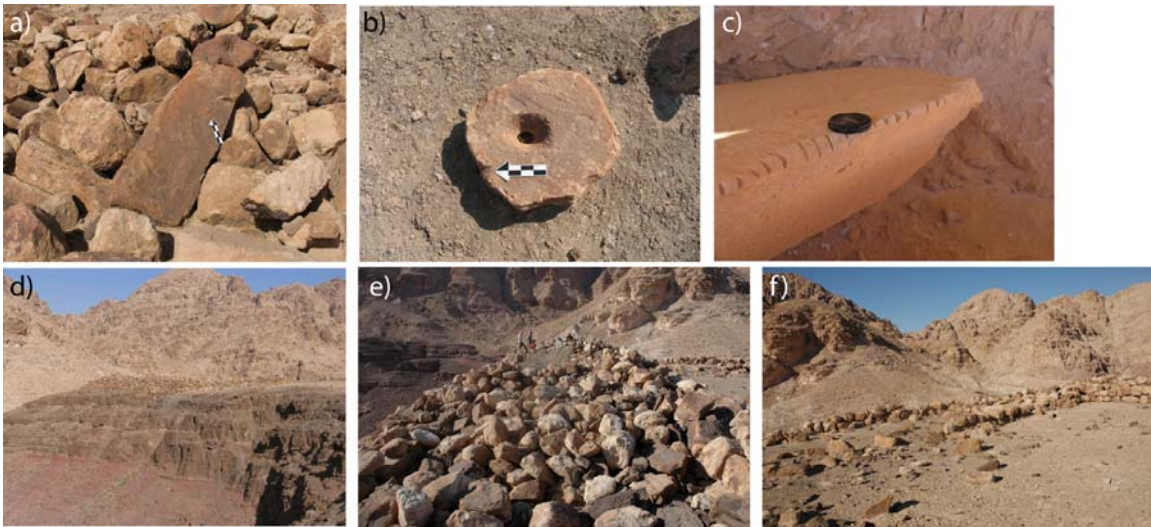


FIG.11: Details from *Rās al-Miyāh East* Fortress: a) massive sandstone ashlar is seen in the collapse of the eastern tower; b) carved hole in a sandstone found in the fortress's courtyard, probably a door socket; c) carved stone found in the nearby quarry, probably prepared for the fortress; d) southwestern wall of the fortress, just above the edge of the dolomite plateau; e) southwestern wall of the fortress with semi-casemate rooms filled with rubble; and f) northwestern inner and outer walls of the fortress (view from the courtyard).

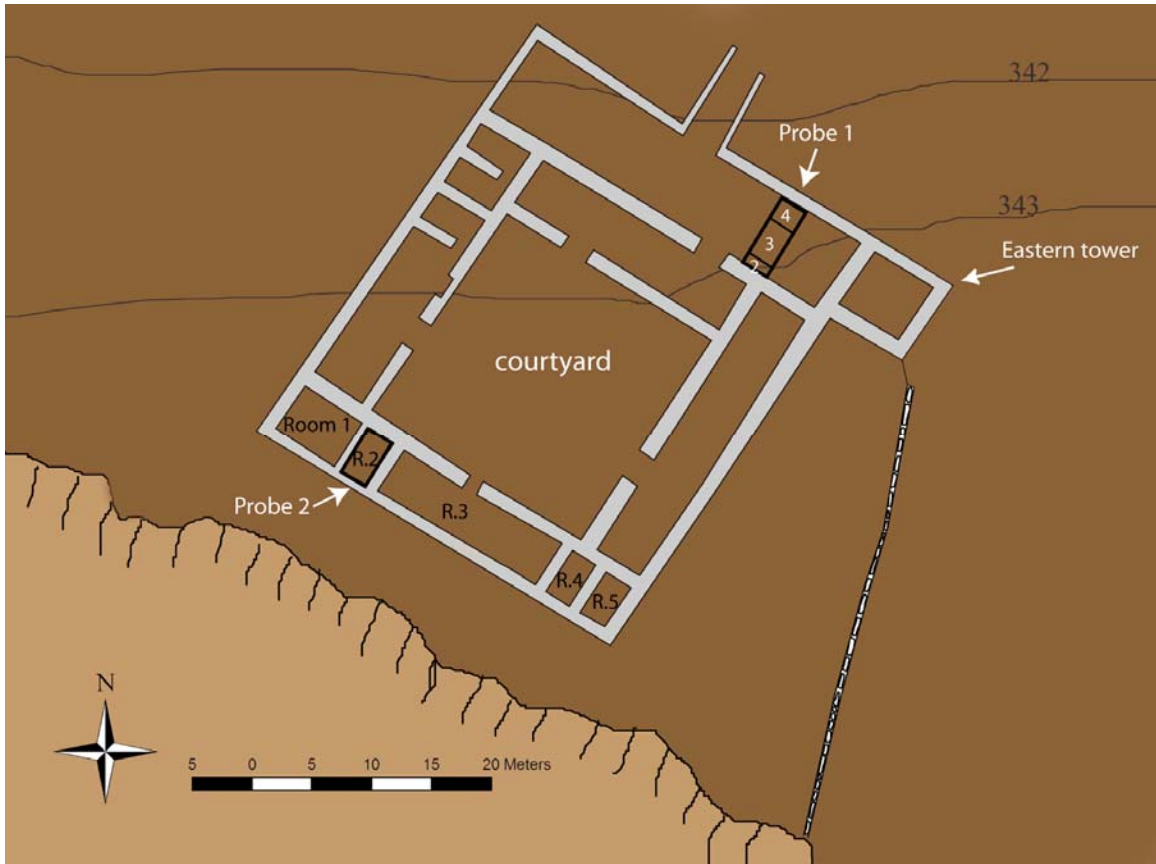


FIG.12: Wall plan of *Rās al-Miyāh East*. The location of the sample excavations are marked with black rectangles. Contour lines are approximate.

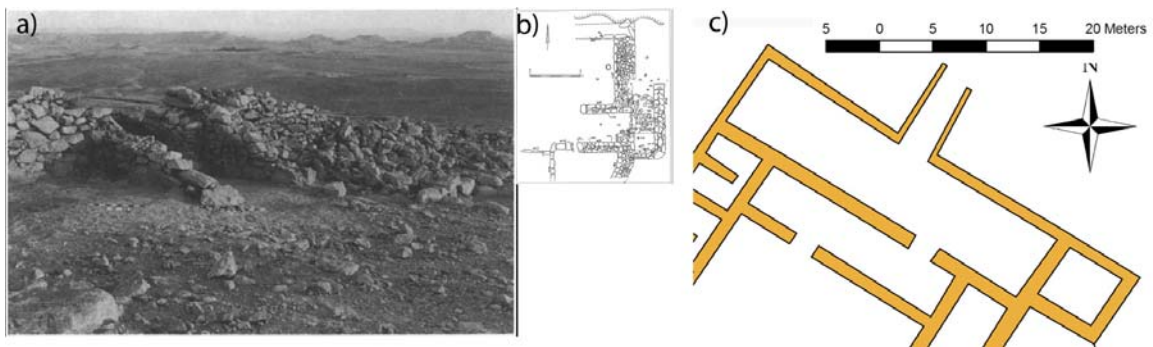


FIG.13: A picture (a) and a plan (b) of the gate complex of the so called “Israelite Fortress” of Quseima (after Meshel 1994: figures 7 and 8). The parallel walls are interpreted as being constructed for overcoming elevation difference, and are similar in shape and purpose to those found in the fortress of *Rās al-Miyāh East*.



FIG.14: The sample excavations in *Rās al-Miyāh East*: a) probe 1 in the northeastern corridor. An area of ca. 1.5 x 6.15 m was opened between the outer and inner walls (view to the northwest); b) foundation trench beneath the inner wall. Excavations into bedrock exposed the base of the wall (note the small copper nodules and the brittle shale of the upper unit of Burj formation); c) an overview of the casemate room 2 before its excavation; and d) the excavated casemate room at the end of excavation, view towards southwest. Bedrock was not reached in this probe.



FIG.15: Multispectral satellite image of the fortress of *Rās al-Miyāh East* and its vicinity (image taken from GoogleEarth).

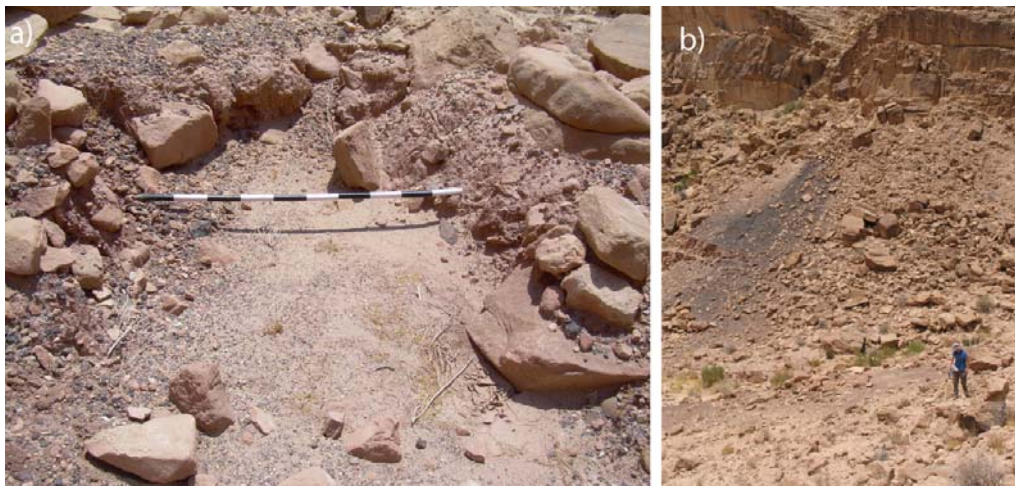


FIG.16: The copper mines near *Rās al-Miyāh East*: a) blocked shaft; b) black tailings, easily visible on the bright sandstone slope, indicate the location of an ancient mining shaft.



FIG.17: A large (13 x 19 x 8 m) Iron Age enclosure made of the local sandstone in the vicinity of the copper mines near the fortress of *Rās al-Miyāh East*.

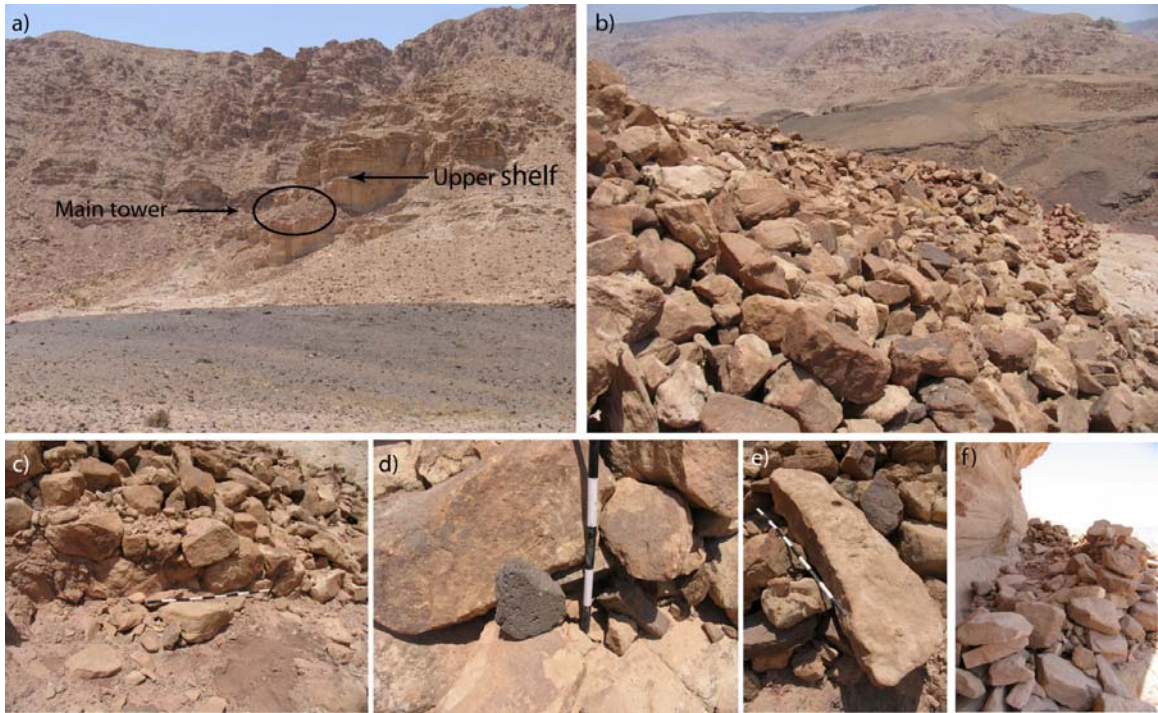


FIG.18: *Rās al-Miyāh East* - remains of a tower on the sandstone cliffs: a) overview; b) massive collapse of the main structure; c) face of the western wall of the tower; d) basalt grinding stone found in the collapse of the tower; e) massive sandstone building block in the collapse of the tower; and f) construction remains on the upper shelf.

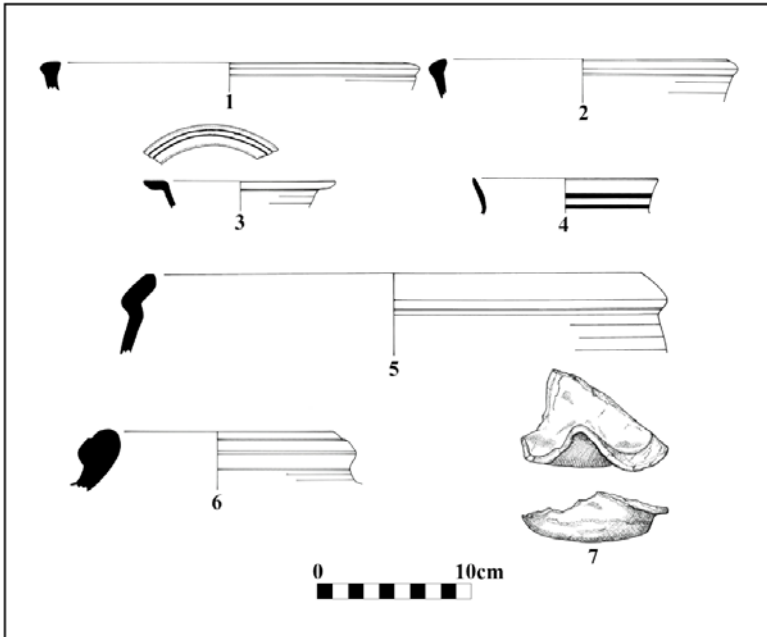


FIG.19: Representative Iron Age ceramics from the fortresses of Rās al-Miyāh and their vicinity: 1) Bowl, *Rās al-Miyāh East* (EDM 8137, Reg. 56); 2) Bowl, *Rās al-Miyāh West* (EDM 5663, Reg. 160); 3) Bowl, copper mining complex of *Rās al-Miyāh West* (EDM 6549, Reg. 51); 4) Bowl, copper mining complex of *Rās al-Miyāh West* (EDM 6549, Reg. 268); 5) Krater, the tower on the sandstone cliff near *Rās al-Miyāh East* (EDM 11259, Reg. 73); 6) Jar, copper mining complex of *Rās al-Miyāh East*, near western shafts (EDM 11152, Reg. 211); 7) Lamp, copper mining complex of *Rās al-Miyāh West* (EDM 6549, Reg. 52).