

MARJ RABBA

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In 2013, excavation at Marj Rabba, the first site in a series of investigations of the Galilee Prehistory Project (GPP), was intended to be the final season. However, the continued excavation of Room 1, first recognized in 2012, includes stone walls preserved over 1 meter in height, an associated storage area with an in situ mace-head, architectural modifications, and multiple phases. By the end of the 2013 season this area was unfinished. A decision was made to mount a small, shorter season with an “elite” crew of experienced excavators in the summer of 2014 in order to investigate completely Room 1 and the associated structures, courtyard, and phases. After briefly recounting the results of the 2013 season, the following report focuses on two recently published articles and one scheduled to appear in September 2014 on detailed aspects of Marj Rabba — animal husbandry, geophysical survey, and archaeology from the air.

Background

The Chalcolithic period sees the beginnings of socioeconomic differentiation, long-distance trade in prestige goods, specialized craft production, public ritual architecture, and possible evidence for the first emergence of hierarchy and political leadership. In the southern Levant, the fifth and early fourth millennia BC (the Chalcolithic period, or the “Ghassulian,” after the type site of Tulaylat al-Ghassul) receive considerably less scholarly attention than the Neolithic period or the later biblical ages. Yet not long after the fundamental changes of the Neolithic Revolution, major cultural and demographic changes occurred during this period. With the expansion of Chalcolithic villages in size and number, horticulture and the secondary products of animals played increasingly important roles in the economy. Craft production exhibited great technological expertise and investment, with materials procured over medium to long distances, and innovative techniques arose, from stone working to copper metallurgy. Mortuary practices also became more diverse, with a dramatic but uneven increase in associated status goods. The causes for these dramatic shifts remain obscure, as does the degree of social complexity.

Thomas Levy proposed a new model for the Chalcolithic period in the southern Levant. Challenging earlier conceptions of life during the period, he posited that chiefdoms — hierarchically arranged, ranked societies — were first organized in response to a need for “risk management” of increasingly scarce resources, and to lessen conflict over resources, particularly between transhumant pastoralists and agriculturalists. In this model, the adaptive role of culture in response to environmental conditions is emphasized. Others, disagreeing with this model, theorize that Chalcolithic society was relatively egalitarian. Much of this debate relies on evidence collected from excavations at a few sites, primarily in the northern Negev, southern Jordan valley, and Golan. Unlike those regions, knowledge of life in the Galilee during the Chalcolithic is extremely limited. For example, we have no radiocarbon dates for a Chalcolithic settlement in the Galilee, nor do we have an architectural plan. Yet

one of the richest burial caves, in terms of human remains and ossuaries, was discovered accidentally with a bulldozer during roadwork in Peqi'in, a village in the Upper Galilee. Peqi'in Cave included the remains of hundreds of individuals and a range of ossuaries far more richly decorated than any found in Levantine prehistory. In addition to the elaborately decorated ossuaries, copper implements and an ivory figurine were recovered; pottery vessels included some probably originating in the Golan.

The burial cave at Peqi'in was a surprising discovery not only because of what was found, but *where* it was found: archaeologists knew of many secondary mortuary burials in ossuaries dated to the Chalcolithic, but these were found along the coastal and piedmont zones of central Israel and the occupied territories. Did people come from distant areas, or did Peqi'in serve as the burial ground for people living in nearby settlements? Was this a regional burial site for different communities across the Galilee or from farther away? The dearth of published excavations in the Galilee makes these questions difficult to address.

The Galilee Prehistory Project is broadly designed to address these and other questions by examining the dramatic changes in the relationship of villages, mortuary sites, and the lives of people living in the Galilee during late prehistory. More specifically, the goal is to examine material culture and biological data such as botanical and faunal remains from the Galilee for comparison with other regions of the southern Levant in order to better understand the livelihood and intra- and inter-regional connections of the inhabitants.

Excavations and survey of the site of Marj Rabba (Har ha-Sha'avi, west) constitute the initial phase of the Galilee Prehistory Project. Marj Rabba is a previously unknown Chalcolithic site located in the lower Galilee, near the modern town of Sakhnin, just one kilometer north of the Roman-period site of Yodefath. Marj Rabba provides a unique opportunity to gain insight into the developments that took place in a village site occupied exclusively during the Chalcolithic. The excellent architectural preservation, rich material culture, and substantial faunal assemblage makes this an essential site for understanding aspects of social complexity and ancient economy, setting a baseline for future comparisons to other Chalcolithic sites within the Galilee and beyond.

Marj Rabba 2013 Season

The site of Marj Rabba is a late prehistoric settlement in lower Galilee, dated roughly to the Chalcolithic period (ca. 4500–3600 BC). Situated on active agricultural land and a recently planted forest, Marj Rabba is located in a region of Israel with a Mediterranean climate and clay-rich soils that is more suitable for agriculture than nearby arid areas such as the Negev of southern Israel. As previously discussed in Oriental Institute annual reports, the site features circular and rectilinear stone foundations in at least three different building phases, exposed over five seasons (2009–2013) of excavation.

During the fifth excavation season at Marj Rabba, conducted between July 15 and August 16, 2013, our largest team of twenty-four students, interns, volunteers, and professionals gathered to continue investigations. Our team included Professor Michael Homan of Xavier University, Louisiana, who brought two students to join the team. Students from the University of Chicago, the University of Puerto Rico, the University of Connecticut, Pomona College, and UCLA all participated enthusiastically in the excavations, analysis, field trips, and lectures. Repeating the success of the 2012 season, we continued our collaboration with the Rowe-Clark Math & Science Academy in Chicago. Rowe-Clark instructor Maggie Culhane and

five students joined us for seminars at the Oriental Institute during the spring and then made the trek to Israel for the excavations.

In the post-excavation period Anneliese Marty and Jessica (Tovah) Kadish (fig. 1), Metcalf interns from the Center for Jewish Studies at the University of Chicago, assisted in putting together the final report for the Israel Antiquities Authority — a 365-page behemoth.

Intended to be our final excavation season, the focus was to explore the earliest phases of building and occupation, particularly the exposure of the rectilinear architecture and related surfaces visible below the curvilinear stone features (silos?) removed in previous seasons. This area was affected by rebuilding episodes that probably utilized building stone from earlier structures. For example, w174A, a north-south wall fragment (fig. 2), was probably the eastern wall to rectilinear building in squares C1-D1. The continuation of that wall, where it would have joined the northern wall (w7) is now missing, and may have been robbed for later building projects. A few smaller pits were discovered against the southern face of w7. To the south, w194 probably formed a corner with the east-west wall (w120), which is parallel to the northern wall (w7). In the western areas of that room, bedrock begins to appear, some of which may have been incorporated in wall constructions. A later pit cuts the southwestern corner of the room.

To the east, rectilinear Room 2 is formed by three walls (203A, 208A, 217A) but is missing the western wall. Near the entrance in the north wall, a small posthole or cupmark is located



Figure 1. University of Chicago interns (left, Tova Kadish; right, Ani Marty) working on post-excavation at the W. F. Albright Institute for Archaeological Research, Jerusalem

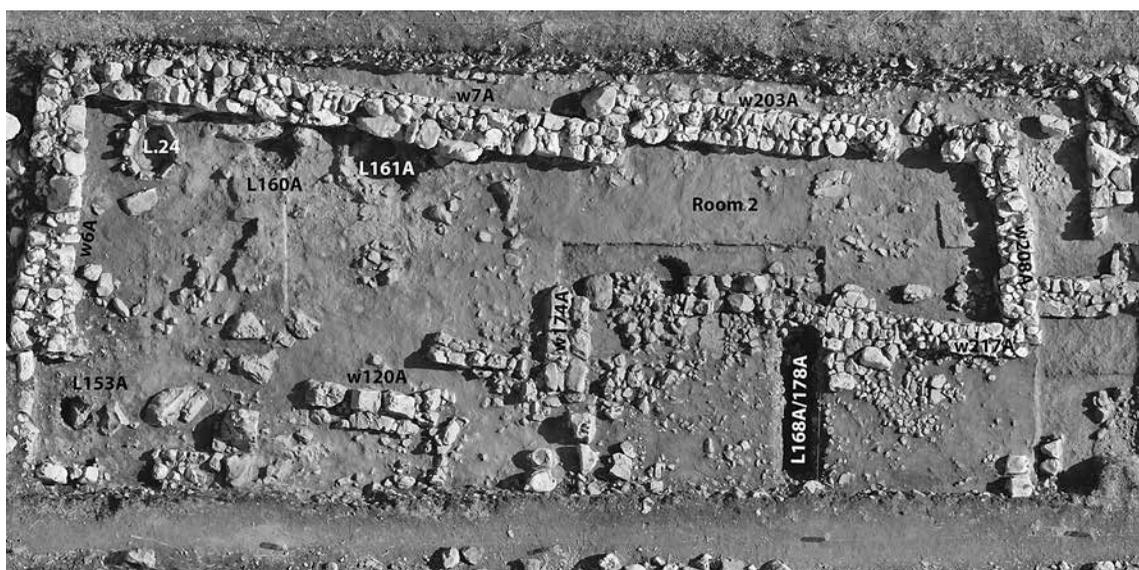


Figure 2. Area AA

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in the floor near eastern wall 208A. On the southern side of wall 217A, an unusual feature of large flat slabs (w186A) may have been part of a platform or working space.

Farther to the east, in Area BB, the relatively greater depth of deposition was notable, as was the dense concentration of rubble. A profusion of wall fragments between Areas AA and BB demarcates multiple rebuilding episodes (fig. 3); these are cut by a builder's trench on the west face of the well-built and well-preserved w904B. This stone wall, preserved over 1 meter in height, forms the western wall of Room 1. Formed by walls w315B, w928B, and w922B, this room may in fact be a modification of a larger building formed by the continuation of the roughly parallel longer walls (w368B, 928B). The entrance to Room 1 was blocked off, and a circular stone feature (L.392B) built in front. The access to the storage space (L.398B) also was intentionally blocked; a complete stone mace-head was placed in the storage bin. In order to complete this area, this room and the open space (courtyard?) to the east will be the primary focus of excavations during the 2014 season.

In Area CC, a surface (L.594C) was contemporaneous with the fragment of a corner formed by walls w567C and w566C (fig. 4). Associated with these walls were at least two pavement layers (L.580C) created with flat limestone; in places it appeared that the stones may have been set on a thin layer of sediment. On top of the stones a hard mud plaster was periodically added or repaired. In places this surface was so hard that only a pick would break the crust. Small amounts of degraded white plaster were visible, along with charcoal inclusions, within the mud matrix. A surprising number of small mud-plaster pits ("cupmarks")



Figure 3. Area BB



Figure 4. Area CC



Figure 5. Densely packed cattle bones in pit L.559C, Area CC

and other pits were associated with this area; many were extremely hard, similar to the rock-hard surfaces.

A final feature was unusual. A distinct concentration of animal bones was identified protruding from the eastern section of Area CC. A small square was opened and the topsoil removed to expose the densely packed bones (fig. 5). Over 400 bones were recovered, and with the exception of one goat phalanx, all were cattle bones, an extremely high relative frequency in contrast to the overall faunal assemblage. Representing at least two cows, this deposit appears to be the result of a feasting event.

Yorke in Jerusalem for the Year

Yorke was awarded a National Endowment for the Humanities Fellowship at the W. F. Albright Institute of Archaeological Research (AIAR) for 2013–2014 in order to carry out analysis for the publication of the research at Marj Rabba. After five seasons of excavation, intensive survey, and geophysical research (magnetometry and ground-penetrating radar), all the excavated material is currently held in a dry, secure storage facility at the AIAR campus in Jerusalem. Yorke's residence at the Albright was essential for the quick analysis and sustained focus on publication of this key Chalcolithic site. While based in Jerusalem, Yorke was able to facilitate the study of the archaeological material from Marj Rabba for the other specialists (animal bone, GIS, pottery, small finds, ground stone, and survey); at the same time he coordinated photography and illustrations. During his stay at the Albright Institute, study was enhanced by the addition of Hebrew University Rothberg International School interns Gabby Borenstein (Columbia University) and Blair Heidkamp (Wooster College).

Preliminary Reporting: Three New Publications

Geophysical Prospection

1. T. M. Urban, Y. M. Rowan, and M. M. Kersel (2014). "Ground Penetrating Radar Investigations at Marj Rabba, a Chalcolithic Site in Lower Galilee, Israel." *Journal of Archaeological Science* 46: 96–106.

In *Oriental Institute 2011–2012 Annual Report*, the preliminary results of the geophysical prospection carried out with Thomas M. Urban of the University of Oxford during the 2011 field season were presented. This year, the results of that research were published in the *Journal of Archaeological Science*. Two methods, magnetic gradiometry and ground-penetrating radar, were employed at the site in order to further define the extent of subsurface features to the south, north, and east of the current excavation area. The site is comprised primarily of limestone architectural features, the physical properties of which differ from the local soils in which the features are situated. Because of these disparities in electrical and magnetic properties between target and matrix, our team was able to successfully locate and define a number of features non-invasively.

Marj Rabba features shallow limestone structures situated in a terra rossa matrix. Terra rossa is generally considered unsuitable for carrying out ground-penetrating radar (GPR) studies due to weak signals, particularly within the relatively high-frequency range most often used in archaeological GPR surveys. The small stones scattered across the landscape and in the subsoil aggravate the weak signals and can also obscure the archaeological fea-

tures buried below the ground. Despite the dense concentration of stones above and below the ground at Marj Rabba, GPR was successful. The selection of a somewhat lower antenna frequency (250 MHz) than is typically recommended played a large role in the success of the survey. In the article, we argue that using the lower antenna frequency and close transect spacing (the width between the lines that the GPR equipment is dragged over the surface of the site) resulted in well-delineated architectural features. The GPR survey at Marj Rabba revealed a number of potential archaeological features in each survey area, thereby confirming the surface survey and expanding the known bounds of well-preserved architecture just below the ground surface. Most features detected appear to be architectural remains, which are likely related to the excavated Chalcolithic structures, the only ancient architecture found at the site to date.

In the article we also contend that GPR can be used successfully as a coarse reconnaissance method where dense data collection is not possible or practical, as is the situation in the olive grove at Marj Rabba. Archaeologically, the settlement scale and complexity shown by these results indicates that Chalcolithic villages are not only present in the Galilee but, despite poorer preservation, are extensive and architecturally sophisticated like roughly contemporaneous settlements in other regions. In combination with excavation results, the structures detected with GPR at Marj Rabba provide the largest plan of an early Chalcolithic settlement in the Galilee.

Pigs at Marj Rabba

2. M. D. Price, M. Buckley, Y. M. Rowan, and M. M. Kersel (2014). "Animal Management Strategies during the Chalcolithic in the Lower Galilee: New Data from Marj Rabba." *Paléorient* 39/2: 183–200.

How people herd, hunt, and house their animals during the Chalcolithic is a fascinating aspect of the period. As people transition from hunters and gatherers to an increasingly sedentary lifestyle, analyses of animal management strategies provide important insights into subsistence economies and sociopolitical structures. In the recently published paper in *Paléorient*, Marj Rabba faunal analyst Max Price (Harvard PhD candidate and former University of Chicago undergraduate), biologist Mike Buckley (University of Manchester), Yorke, and Morag combine kill-off patterns, metrical data, and artifactual data in comparison with other Chalcolithic sites in the region in order to explore regional differences in animal husbandry during this crucial period of socioeconomic change.

Increasing social differentiation and economic specialization are hallmarks of the Chalcolithic period in the southern Levant and some of the most important sources of economic specialization were animal products, particularly the secondary products of sheep, goats, and cattle. Secondary products include things like wool, milk products, and animal traction, anything that does not involve the primary product of meat. It is often difficult to detect secondary products in the archaeological record — typically only indirect evidence is available. An element of secondary products during the Chalcolithic was the utilization of cattle for traction, probably to maximize the production of grain. Analyses of the cattle remains indicate that the animals were involved in traction-related activities. These characteristics, coupled with the large proportion of sickle blades and the numerous circular structures at Marj Rabba, possibly grain silos, suggest an emphasis on grain production. The faunal, architectural, and archaeobotanical evidence all support the conclusion that grain was intensively

cultivated beyond subsistence needs at Marj Rabba. Cattle would have provided an important source of labor for intensifying cereal production.

In the article we conclude that at Marj Rabba, in contrast to Chalcolithic sites in the northern Negev and at the type site of Tulaylat al-Ghassul, there were very few specialized animal management strategies. In addition to the increased production and management of grain and other edible elements, Chalcolithic farmers were diversifying their use of secondary products. We argue that although villagers exploited secondary products, the inhabitants concerned themselves primarily with keeping their livestock populations secure from disaster and unpredictable loss — the people of Marj Rabba emphasized risk-minimization.

An integral aspect of the article is the discussion of pigs. Domestic pigs were an important resource at some sites during this period, but nearly absent at others. Up until now scholars have largely ignored the significance of swine husbandry in the southern Levant. Pigs do not provide secondary products, but they play an important role in the investigation of the evolution of complexity. At Marj Rabba, pigs were present in abundant proportions despite the possible difficulty of accessing water (we have yet to understand the early water management strategies at the site).

The differences between faunal patterns in the northern Negev, Golan, Jordan River valley, and Galilee regions point to a highly diverse animal economy in the southern Levant during the Chalcolithic. The faunal data from Marj Rabba suggest a combination of animal management strategies, reflecting regional distinctions in economic specialization. Different regions began intensively exploiting domestic animals for different reasons.

Archaeology from the Air

3. A. C. Hill, Y. M. Rowan, and M. M. Kersel (in press). “Mapping with Aerial Photographs: Recording the Past, the Present, and the Invisible at Marj Rabba, Israel.” *Near Eastern Archaeology*.

In previous *Oriental Institute Annual Reports* (2011–2012, 2012–2013), Yorke and Morag reported on the use of drones and other types of aerial photographs in order to holistically document the site. Aerial photography in archaeology is not a new phenomenon, but recent technological developments have allowed for increased precision and real-time rendering of archaeological facts on the ground. Over the five seasons at Marj Rabba, we used a variety of tools to record the site, the excavations, and the landscape. Along with traditional plan and section drawing, digital and paper record-keeping, we use satellites, historical aerial photographic archives, fixed-wing unmanned aerial vehicles, rotary-wing unmanned aerial vehicles, poles, and terrestrial handheld photography, and photogrammetry, all in the quest for a comprehensive record of our work

In this *Near Eastern Archaeology* article we discuss mapping the archaeological landscape with varied aerial photographs and tools. New and innovative photographic technologies and software for post-processing allow us to communicate better the results of field research to professionals and the larger public.
