# GALILEE PREHISTORY PROJECT

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## Survey and Test Excavations of Wadi el-Ashert (Bet Netofa II, Hanaton)

After the completion of six years of excavations and survey at Marj Rabba, the next phase of the Galilee Prehistory Project (GPP) is to identify and investigate another Chalcolithic (4600–3600 BC) site in the Galilee in order to examine further the dramatic changes in the relationship of villages, ritual sites, and mortuary practices during this under-investigated period. Comparisons between sites in the Galilee with other areas of the southern Levant (lands bordering the eastern shores of the Mediterranean Sea) allows for greater insights into the striking transformations in ancient life ways such as agricultural expansion, economic diversification, and intensified craft production. Excavation at another Galilean site provides further comparative evidence on subsistence economy, material culture production, and intra- and inter-regional variability during the Chalcolithic period.

*Figure 1. Wadi el-Ashert, looking east to the Bet Netofa Valley, with the Eshkol reservoir in the background (photo: Y. M. Rowan)*

*Figure 2. Field walking during survey, looking west across the Wadi el-Ashert (photo: Y. M. Rowan)*

During the summer of 2015 the Galilee Prehistory Project conducted an intensive survey (pedestrian, unpiloted aerial vehicle (UAV), and geophysical) and limited excavations (shovel tests) along the Wadi el-Ashert, a small drainage area on the western side of the Bet Netofa Valley, directly east of the village Bir al-Maksura and south of Kibbutz Hanaton (fig. 1). Previous limited salvage excavations (carried out in advance of a pipeline) in this area (Nativ et al. 2014), videntified sixth- to fifth-millennium remains that further confirmed this might be a site worthy of additional investigation.

## Survey

A goal of the intensive pedestrian survey along the small wadi just south of Kibbutz Hanaton was an understanding of the scope, size, and boundaries of the site referred to in past publications by different names: Bet Netofa II (Gilead 1989; Shalem 2008) or Hanaton (Nativ et al. 2014). The small but seasoned crew (two Metcalf interns from the University of Chicago, three recent graduates of Whitman College, one recent graduate of the College of Wooster, one current undergraduate at the University of North Carolina, Greensboro, and one recent PhD graduate from the University of Toronto) worked tirelessly through the heat, the hard-packed earth, the thistles and brush to provide greater understanding of the site and its boundaries (fig. 2). The pedestrian survey was augmented by an intensive geophysical component and by the placement of shovel test pits to understand better the limits, depth, and stratigraphic sequence of the site.

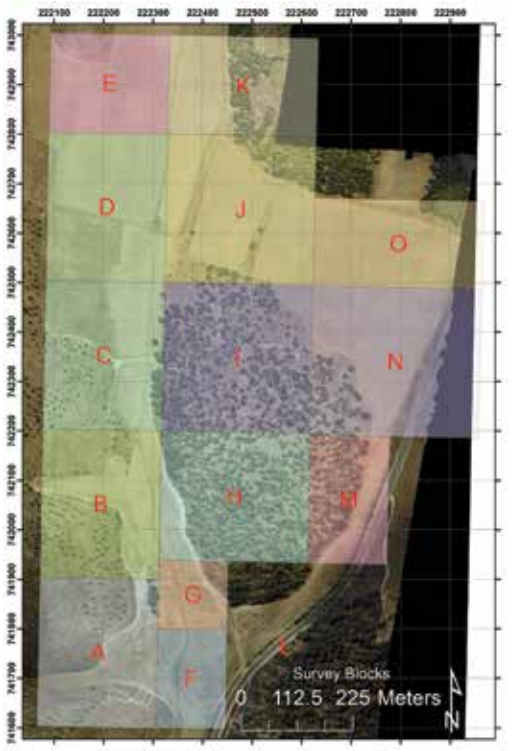


*Figure 3. Orthophotograph with survey blocks (A. C. Hill)*

Maps of the survey/excavation area were created using images collected during several UAV flights using a fixed wing UAV. A series of fixed ground control points (GCPs), used to facilitate geo-referencing the UAV data, were recorded using a Leica total station. Photographs taken with cameras on the UAV (capturing images every 2–3 seconds during flight) were processed in Agisoft Photoscan Pro, using the GCPs, to create orthophotos and Digital Elevation Models (DEMs) for export to ArcGIS. In ArcGIS, the UAV-derived orthophotos were used as base maps to divide the survey area into transects for the pedestrian survey (fig. 3), and establish a grid

for shovel test pits. Primarily surveyed using standard cameras onboard the UAV, we also surveyed the site with cameras modified to record the near infrared spectrum using NDVI (normalized difference vegetation index) in order to investigate plant growth variability that might reflect buried features. Primarily surveyed using standard cameras onboard the UAV, we also surveyed the site with cameras modified to record the near infrared spectrum using NDVI (normalized difference vegetation index) in order to investigate plant growth variability that might reflect buried features. This was met with limited success.

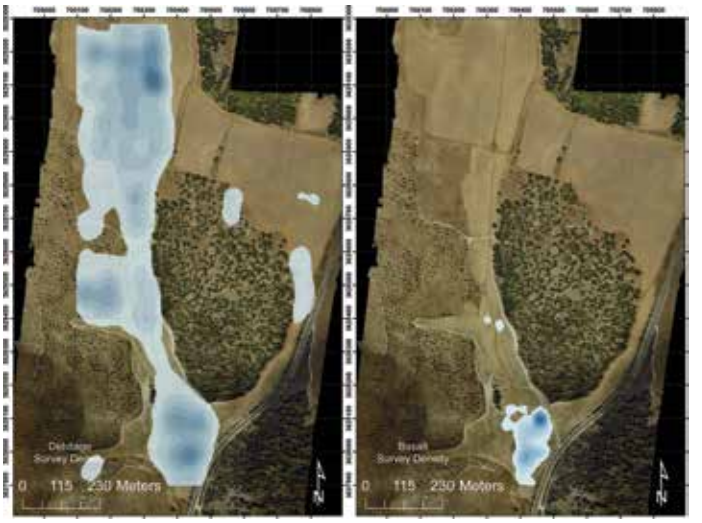


*Figure 4. Orthophotograph comparing flint debitage and basalt distribution from pedestrian survey (A. C. Hill)*

## *Survey Methodology*

Traditional intensive pedestrian survey typically consists of individuals placed a particular distance apart, walking in straight lines to observe material culture and landscape features that provide evidence of the past. During the Wadi el-Ashert survey we walked transects (the straight lines) placed 20 m apart and approximately 300 m long (within the boundaries noted in fig. 3). The standard length of transect blocks was 300 m, although the distance actually walked was modified according to fence lines, roads, and other obstacles. Thus, the first transect in block A, Transect A1, was 300 m long, while blocks G and F were smaller. The length of transects was also modified to reflect areas where the site was more easily recognizable based on previous salvage work (Nativ et al. 2014). These areas were covered more intensively. Along each transect, diagnostic pottery (rims, bases, handles, painted/decorated), flint (tools, flakes, debitage), and ground stone artifacts (typically made of basalt), were all noted by the field walkers. Counts of lithic tools and debitage, basalt, and ceramics (Chalcolithic, Byzantine/Roman, and other) were recorded in 20 m segments along each 300 m transect. Field walkers also noted the vegetation, ground coverage, and other aspects of the landscape encountered on a particular transect (proximity to roads, agricultural disturbances, sources of water). At the end of each field day the data was entered into an Excel spreadsheet. This allowed for the spatial analyses of the surface finds.

## *Survey Results*

A series of distribution maps were created based on the surface finds, which resulted in some curious patterns in the survey area. Interestingly, the analyses demonstrate that the distribution of lithics does not correlate well with Chalcolithic ceramics or basalt artifacts. Mapping of the distribution of lithic debitage (the fragments produced during the process of

lithic reduction and the production of chipped stone tools) indicates several different high concentrations of flint debris along the Wadi el-Ashert, as seen in figure 4. At the northern end of the wadi, concentrations of flint reflect flint nodules unearthed by centuries of plowing, although in addition to the chips and chunks of flint some prehistoric chipped stone artifacts were also included. Higher concentrations of lithics relative to ceramic sherds might also be the result of differing properties — rock is more durable and survives longer on the surface than ceramic, particularly where annual plowing has continued for years.

*Figure 5. Chad Hill demonstrating excavation and recording procedures for shovel test pits (photo: Y. M. Rowan)*

In contrast, the distribution of Chalcolithic ceramics and basalt remains are concentrated in the southern aspect of the area, just before the southern end of Wadi el-Ashert meets the road (fig. 4). The slopes along the channel are the primary area of the site known as Bet Netofa II (and Hanaton), which seems to represent Wadi Rabah, early Chalcolithic, and late (Ghassulian) Chalcolithic. An explanation for this might be as simple as topography — this area is downslope and during episodes of intense rain/flooding the lighter ceramics might wash down the slope. This would not, however, explain the predominance of basalt (a heavy material) at the southern end of the wadi. It is these types of patterns that archaeologists look for during surface surveys. Once a cluster of artifacts has been identified in a concentration, further analyses are required in order to determine if the deposition is accidental or indicative of something below the surface (architecture/settlement).

## Test Excavations

In order to assess the nature of the surface concentrations and evaluate patterns detected by the mapping of the survey results, test excavations are required in order to determine whether there is anything below the surface. Sometimes surface scatters are the result of agricultural or other modern practices. Testing the relationship between surface and sub-surface patterns leads to the next step: test pit excavations. For this, small holes are excavated (see fig. 5) along a grid at predetermined locations. The excavated dirt from each shovel test is passed through a 2–3 cm mesh screen and all artifacts are collected. The quantities and types of materials are mapped onto a site grid revealing areas of higher artifact concentrations, which may or may not correspond with the results of a pedestrian survey. If the surface findings are similar to the sub-surface shovel tests, archaeologists might decide to excavate or to conduct other remote-sensing technologies such as ground penetrating radar or magnetometry to gain an even greater understanding of what lies below the surface.

### *Test Excavation Methodology*

During the 2015 field season at Wadi el-Ashert, test pit locations were chosen in order to investigate the results of the intensive pedestrian survey (see fig. 6). Teams of two or three


*Figure 6. Location of excavated test pits within survey area (orthophoto: A. C. Hill)*


*Figure 7. Test pit locations with density distribution of Chalcolithic sherds (orthophoto: A. C. Hill)*

people excavated 61 test pits, all measuring a standard 50 × 50 cm, and dug to a variety of depths (typically excavated until no more cultural material was recovered from the pit, or no greater depth was possible), although never much more than a meter. The depth of the shovel tests was determined by recovering sterile soil, hitting bedrock, or reaching the limitations of field equipment. Shovel tests were excavated stratigraphically with picks and shovels, and all soil was sieved. Each pit was refilled when completed. All artifacts recovered were bagged, washed, recorded, classified and stored.

## *Test Excavation Results*

A goal for the excavation of the test pits was to establish the boundaries and depth of remains in the area of Bet Netofa (II), a known site along the Wadi el-Ashert, with Chalcolithic, Wadi Rabah and Pre-pottery Neolithic artifacts. As seen in figure 6, the southern area within the survey boundaries was more intensively sampled, with shovel tests spaced along both eastern and western flanks of the small wadi in blocks G, F, and A. Some test pits were excavated across the entire survey area, in a 100 m grid, while the majority of test pits were placed in the southern part of the wadi and spaced 20 m apart, where we noticed the greatest concentration of surface material, primarily flint tools, pottery, and debitage. This is also near the salvage excavations carried out by Nativ et al. (2014), which were located just to the immediate east of block F, along the western side of the road.

Summarized data for each test pit included information on the precise location of each pit (easting/northing), the depth of each pit, soil types and color, and general types of finds found for each. For instance, the distribution of Chalcolithic ceramics are much more con-

*Figure 8. Pre-Chalcolithic incised pottery sherd (photo: A. C. Hill)*

*Figure 9. Possible wall in Test pit T14-6 (photo: Y. M. Rowan)*

strained, primarily limited to the southern extent of the survey area, which closely correlates to Chalcolithic pottery from the pedestrian survey (fig. 7). In addition, summarized data on the faunal remains were collected. Although the lack of contextual integrity renders the animal bones of limited interpretive significance, the strong presence of pig bones (ca. 20%) is roughly equivalent to the faunal assemblage profiles from other nearby early Chalcolithic sites, particularly Marj Rabba/Har Hashaavi, where pigs constitute roughly 30% of the total faunal profile, and at least suggests a connection to the Chalcolithic.

Preliminary results of the shovel tests indicate that while there are limited Ghassulian, Chalcolithic diagnostic sherds, much of the ceramic corpus includes red wash, some burnishing, and simple decorative motifs (fig. 8) that fit more comfortably with earlier Chalcolithic or Late Neolithic (Wadi Rabah) styles than the Chalcolithic "Ghassulian" of the south. This is problematic, however, since the better-known "Ghassulian" types are not well represented or documented in the north, underscoring the regional nature of Chalcolithic entities and highlighting one of the reasons the GPP chose this particular area for investigation.

The primary goal of test pit excavation is to elucidate the boundaries of buried artifact distributions and gain insight into stratigraphy across the survey area. As such, test pits are not intended to identify buried features. However, in at least two test pits we may have hit portions of the built environment (see fig. 9). Test pits X and Y contained significantly higher levels of artifacts and may have included portions of walls. These pits are located in block F, where we also found the highest proportions of pottery and ground stone in the surface survey.

## *Geophysical Survey*

Test pit data confirmed that the area with the highest density of prehistoric material is located in the southeast side of the wadi (blocks F and G). As we had only limited field time to dig test pits across our entire grid, we also employed geophysical survey techniques in order to get a greater understanding of the distribution of buried material in this area. Thomas Urban per-

formed an electromagnetic survey of 1 m transects. Results are forthcoming, but preliminary results fit well with the distribution of artifacts we found on the surface and in the test pits.

## Conclusions

This season of exploratory field research was very productive and adds to earlier research that indicated a Chalcolithic site exists in the area (Gilead 1989) with earlier levels dating to the Wadi Rabah, and a pre-Chalcolithic but post-Neolithic period (Nativ et al. 2014). Our survey and the sub-surface investigations, both GPR and test pit excavations, support the recently published salvage results that indicate that the late Chalcolithic (Ghassulian) is poorly represented at the site. Below those late, highly disturbed levels near the surface, our evidence for ceramics supports a less-well understood level of early Chalcolithic, post Wadi Rabah level proposed by Nativ et al. (2014).

Based on these results, we do not think this site has enough potential to fulfill the goals of the GPP. Although the earlier periods represented by this site deserve greater attention, and this site has potential for the Wadi Rabah to early Chalcolithic levels in particular, the late Chalcolithic levels seem likely to have been highly disturbed by plowing and other modern agricultural processes, as well as infrastructural projects. Recent satellite imagery, our field walking, and limited shovel test pits show that the area near the road, in the eastern portion of the survey area, has been heavily affected by recent construction. Yet our survey revealed interesting results. In particular, we believe that a possible Late Neolithic sire also exists on the western slopes above the Wadi el-Ashert where a number of axes and other lithics suggest an earlier occupation. Based primarily on surface finds, and the shallow nature of the deposits, we cannot determine whether this area was agricultural, an occupation, or even possibly a source for flint cobbles.

During the 2016 study season, the team will continue the search for the next project of the GPP.

### *References*

Gilead, I.

1989 "Chalcolithic Sites in Beit Netofa Valley, Lower Galilee, Israel." *Paléorient* 15: 263–67.

Nativ, A.; R. Shimelmitz; N. Agha; I. Ktalav; and D. Rosenberg

2014 "Hanaton: Interim Report on a Neolithic-Chalcolithic Settlement in the Lower Galilee." *Journal of the Israel Prehistoric Society* 44: 117–47.

Shalem, D.

2008 "The Upper and Lower Galilee in the Late Chalcolithic Period." In *In the Hill-Country, and in the Shephelah, and in the Arabah (Joshua 12, 8)*, edited by Shay Bar, pp. 99*–110*. Jerusalem: Ariel Publishing House.