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Rough Cilicia Archaeological Survey: Report of the 2007 Season

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AUTHOR'S NOTE: In 2005 the Rough Cilicia Survey Project was suspended temporarily to facilitate the implementation of the University of Nebraska Excavations at Antiochia ad Cragum, directed by Michael Hoff. In addition to assisting Hoff with his survey at Antioch, Rauh and pottery specialist, Richard Rothaus, assisted by Paige Rothaus and illustrator Burhan Suer, conducted a study season that focused on the RCSP Ceramics Study Collection and the stored context pottery of the survey. A dive team supported by Rauh and Hoff conducted a preliminary maritime survey near Charadros (RC 0401), but team difficulties resulted in the maritime survey being suspended before it really got started. Apart from a brief visit to RC 0303, Karaçukur, where Rauh and Rothaus collected additional lithics and Classical era sherds, the focus remained exclusively on photographing, measuring, illustrating, archiving, and conserving the stored pottery from 1996 through 2004. Seher Turkmen, interim director of the Alanya Archaeological Museum, graciously agreed to store all conserved survey pottery in the museum depot, where it remains to the present day. In 2006 Rauh was invited by Turkish authorities to conduct his newly organized Purdue University study abroad program, the Anatolian Archaeology Field School, at Bilkent University in Ankara Turkey, where the team assisted Levent Vardar of the T.C. General Directorate for Monuments and Museums, with his Galata Kale Survey Project in the Ankara vicinity. The Rough Cilicia Archaeological Survey Project resumed in Gazipasha Turkey in 2007.



Image 1: RCSP 2007 Student Participants: Margaret Bloome, Philip Ramirez (kneeling), Aaron Fettgather, Charlotte Rose, Alexander Jillions, and Taylor Rauh

The 2007 season of the Rough Cilicia Archaeological Survey Project was directed by Nicholas Rauh of Purdue University. Dr. Hulya Caner of the Institute for Marine Science Management at Istanbul University supervised the work of our highland pollen trench excavations. Dr. Unal Akkemik of the Department of Forest Botany, School of Forestry, at Istanbul University conducted the dendrochronological research. These scholars were assisted by graduate student, Margaret Bloome, of Arizona University, and undergraduate students Phillip Ramirez (Purdue University), Aaron Fettgather (American University), Alexander Jillions (American University) and Charlotte Rose (Brown University). Due to permit complications the field season lasted one week, August 2-9, 2007. This season the team focused on paleo-environmental research in the Biçkici Highland behind Gazipasha. Our purpose was to obtain data to determine the age of the current cedar forest near the tree line of the Tauros Mts. as well as to obtain pollen data from trench excavations at the same elevation to determine the remote history of the forest. At the highland (yayla) village of Sügözü, the team, supervised by Hulya Caner, excavated an open pit to obtain 50 soil samples of remarkably remote age. Unal Akkemik was able to obtain 15 tree ring samples from old growth cedar, black pine, and juniper trees in the vicinity to demonstrate that the current highland forest cover is relatively young. We characterize the significance of the Biçkici river basin below.

Approximately 30 km in length, the Biçkici River is the second longest river of the Gazipasha basin (the Hacimusa-Inceağrı R. extends 35.6 km in comparison). It also represents the narrowest, most direct route from the sea to the crest of the Tauros Mts. The Biçkici catch basin can be classified according to three distinct zones: 1. the upper or highland canyon of Karatepe, which is 14.5 km long and 9 km across, characterized by a high altitude river terrace surrounded on three sides by the steep limestone cliffs of the canyon. This highland terrace has been dissected by Biçkici tributaries into a V-shaped headland (500 m elevation) scarred by 180 m deep incisions on either side. At the head of the canyon the river rises from 500 m at the foot of the canyon to 2100 m at the crest of the ridge; it does so over 5 km distance, or an ascent of 300 m per kilometer. The second region of the Biçkici, referred to as the midlands, is 9 km in length and is characterized by rapidly descending table land after the river passes through a narrow rock-faced gorge at the base of the canyon. At the gorge the river sits at 200 m elevation whereas the surrounding peaks stand at 800 m. The mountains that close the river in the mid section descend from approximately 800 m to 400 m over 9 km, with several peaks of 700 m elevation along this segment of the river. At the end of the midland segment where the river basin opens to the plain, the peaks closing the river basin still loom 400 to 500 m above the river. The third section of the river, the coastal plain, 6 km in length, is represented by the flat meandering plain of the river as it approaches the sea north of the modern town of Gazipasha. The river empties into the sea at the northern foot of the Karatepe promontory. In the plain beside the river the survey team located the Biçkici amphora kiln site in 1996. From mountain to shore the resources of the Biçkici R. appear to have been fully exploited by ancient inhabitants.

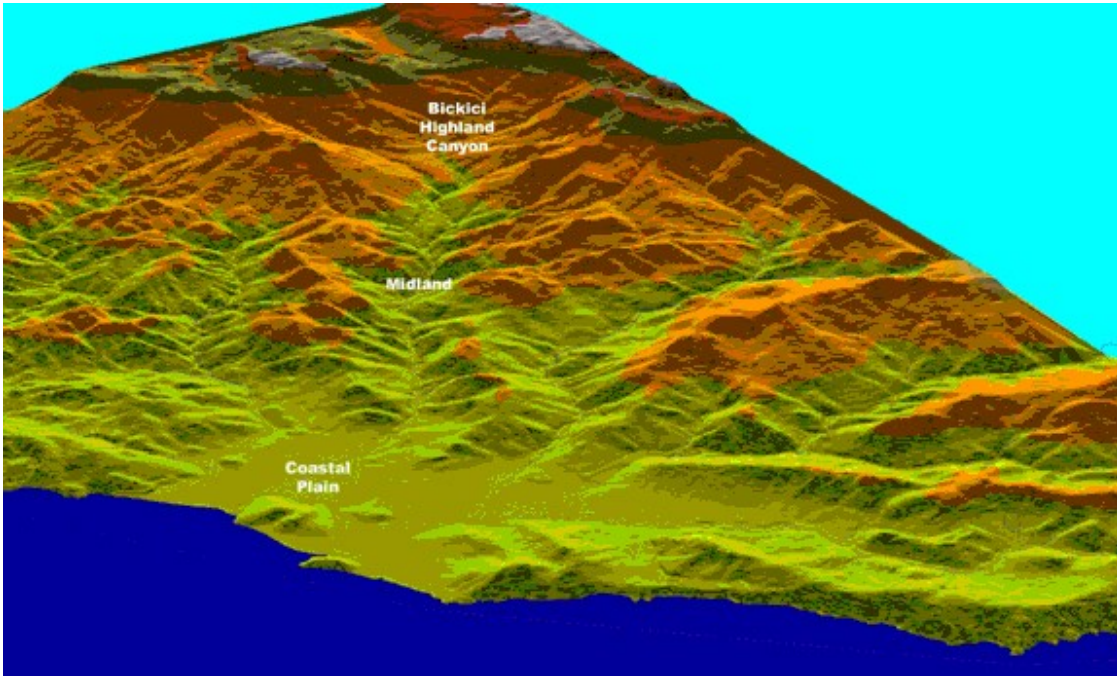


Image 2: Digital Elevation Model of the Biçkici river basin

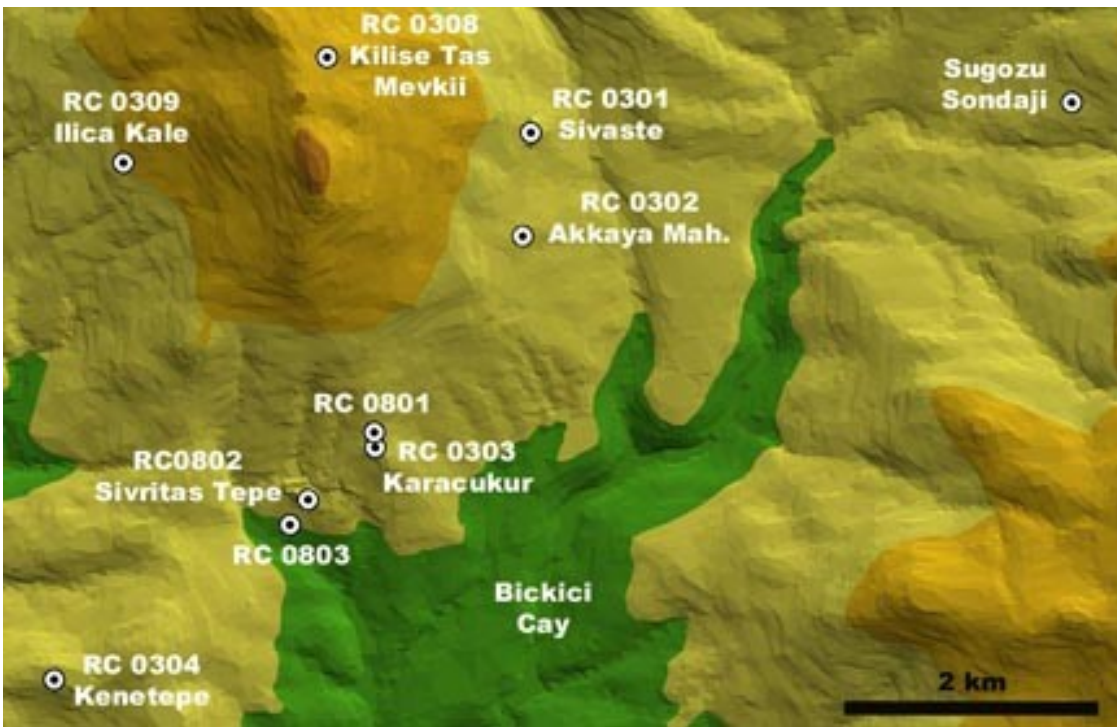


Image 3: DEM View of the Biçkici Highland Area

In the upper canyon the headwaters of the Biçkici River rise to steep mountain peaks with elevations in excess of 2000 m (Ak Dağı 2088 m). At Karaboğaz pass the road from the canyon floor rises to an elevation of 1581 m before descending slightly to Sığözü Yayla. On the west side of the highland river terrace mentioned above the mountain of Karatepe rises somewhat less steeply from the table land area through a

series of benches, minor peaks and saddles until it joins with the crest of the Tauros plateau. The northern and eastern sides of the canyon, on the other hand, rise very steeply as a nearly vertical wall. A consistent spring line is visible between 600-900 m elevation around the entire rim of the canyon, offering abundant water to the rolling hills below. The scattered communities of Karatepe extend along the lower slopes of the semicircular canyon that surround the highland terrace. Small neighborhoods such as Çınarcık, Şahinler, Kaynarca, Akkaya, Çomruk, and Sügözü are nestled in sloping terrain between 900 and 400 m asl. Along the steep slopes of the canyon between 1500-1800 m stand mixed forests of cedar and fir trees of very recent growth. Isolated stands of black pine are also present particularly along the crest of the mountain plateau. Scattered juniper trees occupy the most eroded areas of the landscape. These and similar trees and forestry byproducts attracted the attention of maritime empires during antiquity.

Geomorphological Survey

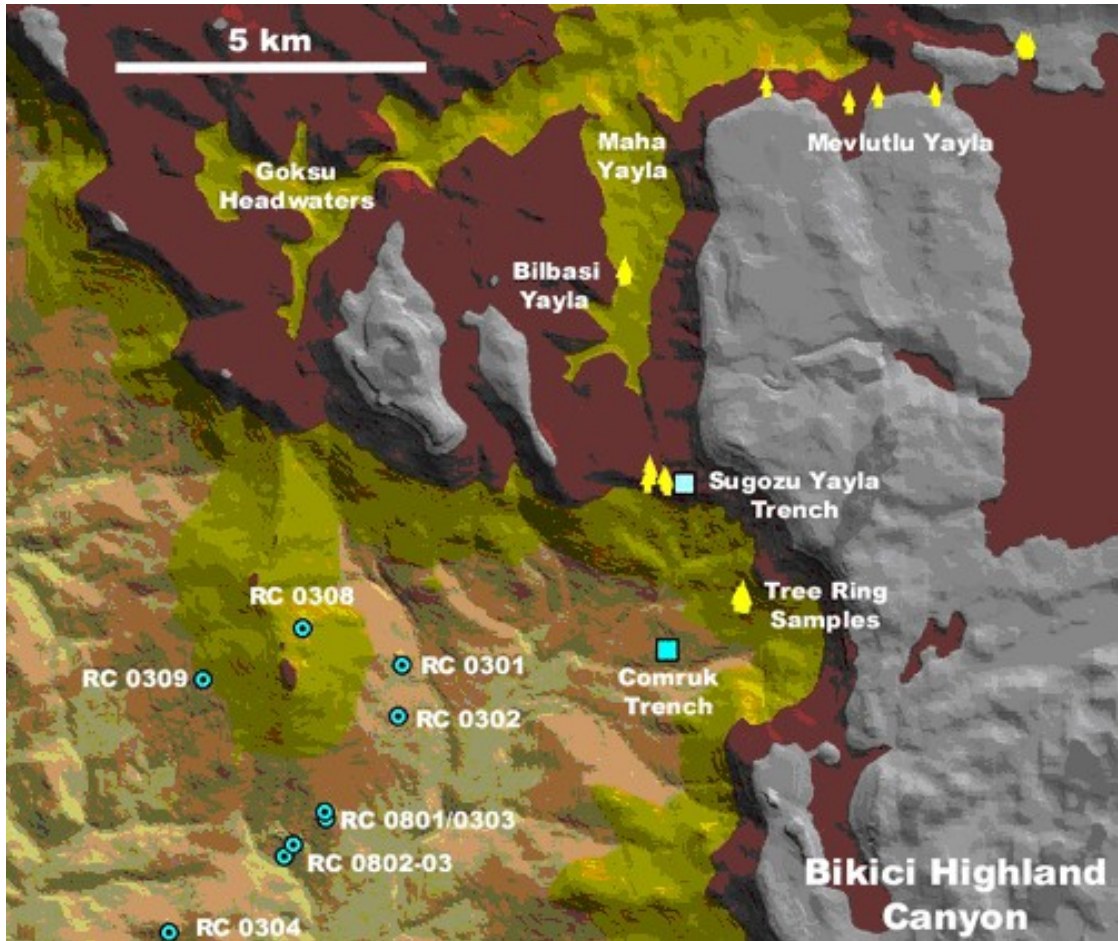


Image 4: DEM View of Geomorphological trench excavations and dendrochronological tree sampling in the Biçkici Highland, August 2007

Limited results with the geomorphic backhoe trenches excavated by M. Doyle in 2004 prompted team members to question the effectiveness of this method for obtaining significant data regarding alluvial deposition consequent to deforestation in the Tauros highland. Not only did the high water table near the sea cause some of the backhoe trenches to be abandoned, but modern landscape disturbances in the coastal plain of Gazipasha appear to have impaired the results we obtained further inland. Of four trenches excavated along the lower arm of the Biçkici in 2004 only one, Trench D, yielded the necessary premodern carbon dates to assess patterns of alluvial deposition. For this reason in 2007 Rauh and Hulya Caner decided to experiment with hand-excavated pollen trenches on relic river terraces in the Biçkici highland canyon, where it was hoped that the alluvial record was better preserved. With the aid of Turkish Village Service (Köy Hizmetleri) administrators, they identified a natural river terrace at Çomruk Mahalle in Sügözü village, at 835 m elevation. A first attempt in a private garden using Caner's Dachnowsky hand-auger failed when the soil was found to contain too many rocks. A second location was selected in a broad flat apple orchard situated beside a rushing stream that forms one of the headwaters of the

Biçkici R. Talet Çomruk, the orchard's proprietor, gave the team permission to dig an auger hole. Due to the proximity of the stream the orchard is well watered and the soil consists of hard-packed but otherwise fine dark layers of silt and clay. Unfortunately, the team damaged the hand auger by pounding it into hardened soil about 1 m. depth, and the excavation had to be abandoned.



Images 5 and 6: Views of the Open Pit at Sügözü Yayla

Undaunted, Rauh and Caner decided to experiment with the tactic of excavating a geomorphic trench by hand at the very crest of the Biçkici headwaters. The team drove past the top of the ridge to the highland village of Sügözü Yayla. There they identified a large open pit below a copse of juniper trees near the top of the ridge (1635 m elevation) as a useful target. According to neighbors a local resident employed a backhoe to excavate the 6 m deep pit while attempting to access spring water for his property. He had been encouraged in this venture by evidence of a small spring at this location. Unable to tap its source, he abandoned the pit as it was. Carved into the bedrock on steeply sloping terrain the pit presented an exposed rock scarp on its south face, ca. 3 m tall, and deep soil deposits on its west and north faces. Due to the sloping terrain the east face stood significantly lower than the other faces. Even from its lowest point, however, the pit descended 2 m below the rim to a wet muddy floor. From the top of the exposed rock face on the south side to the base, the pit was approximately 5 to 6 m deep. On the west face the team observed a rich deposit of moist, fine, very black and almost peat-like soil. The team decided to cut a series of small step trenches into the pit on this side, cutting into the loam some 50 cm at each step to expose in situ alluvial deposits. After carefully dressing the scarp team members extracted small spoon-sized samples every 5 cm. After cutting the first step trench on the west face the operation was shifted 3 m south to take advantage of deeper soil deposition while avoiding exposed rocks and boulders. 5 trenches (trenches 2-6) were cut in descending sequence along a 3 m section of the scarp. The team then relocated back to the west where two more trenches (7 and 8) were attempted in the deepest part of the pit. Here the soil coloration changed visibly from dark black to yellow inorganic sand. Rauh and Caner reasoned that they had reached

Pleistocene layers of deposition and accordingly abandoned the results of the last two step trenches.



Images 7 and 8: Views of the Step-Trenches Excavated in the Open Pit at at Sügözü Yayla

In all some 50 soil samples were obtained from step trenches 1-6 and were taken to Dr. Caner's laboratory at Istanbul University's Institute for Marine Science Management for pollen analysis and carbon separation. In 2008 Caner delivered to Rauh four samples obtained from lower Trenches 5 and 6 in the pit. These were processed by graduate student Margaret Bloome at the University of Arizona carbon laboratory. The samples yielded stunning carbon dates ranging from 11,772 BC (+/- 97) to 7,730 BC (+/- 54). Although the results are preliminary, they indicate that the pollen counts and carbon dates obtained in the Sügözü Yayla geomorphic trench hold the potential to reconstruct the complete history of the cedar forest in this vicinity.

Dendrochronological Survey in the Bickici Highland

Since joining the Rough Cilicia Survey in 2004, Unal Akkemik has undertaken dendrochronological investigations of tree-ring samples from the oldest surviving cedar, fir, pine, and juniper trees in region. These were identified for us by Yusuf Akşahin, Chief Engineer of the Turkish Forestry Ministry's headquarters in Gazipasha, who has spent his career protecting these forests. Thus far, Akkemik's survey has focused on two particular areas: a relic cedar forest at the crest of Gurcam Karatepe and similar tree growth at the crest of the Biçkici Canyon.



Image 9 : View of Mixed Conifer Forest near Sügözü Yayla

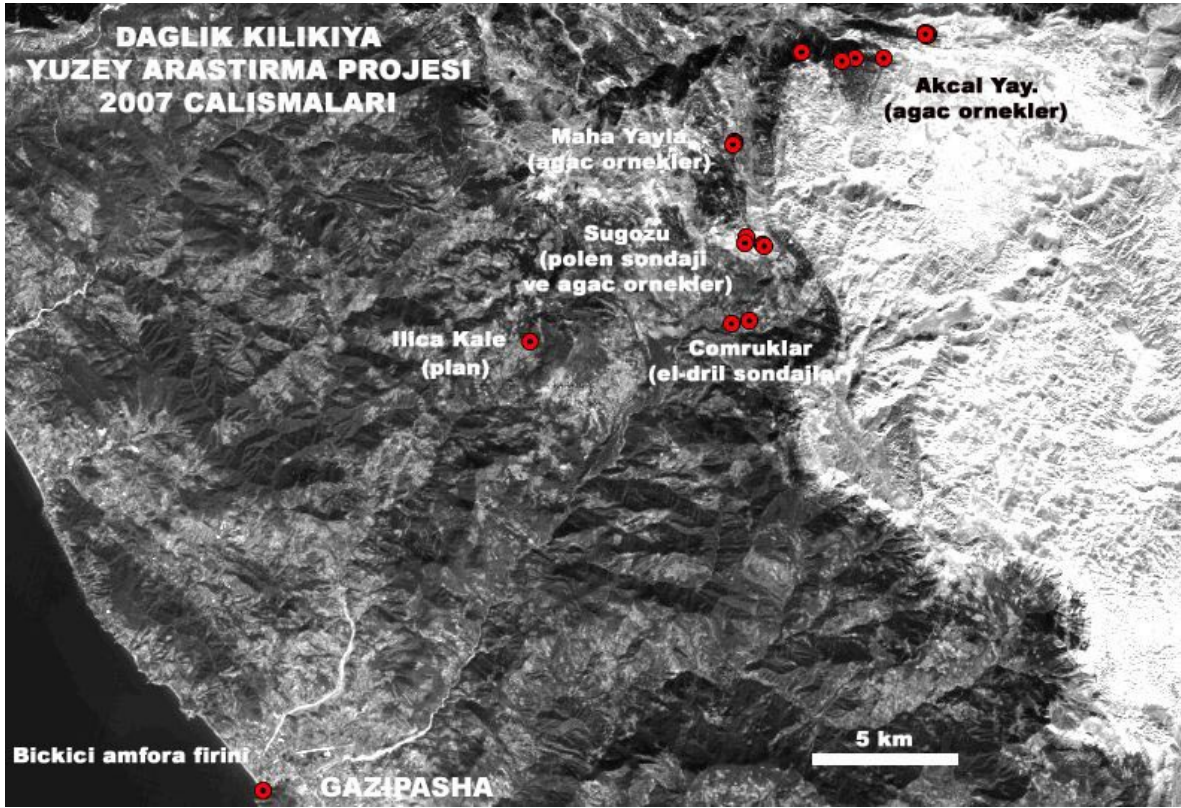


Image 10: Satellite View Detailing Locations of Trench Work and Tree Ring Sampling in 2007



Image 11 : View of Unal Akkemik Obtaining Tree Ring Sample from the Oldest Surviving Tree in the Region (MEV09, Mevlütlü Yayla, 765 years old)

During the 2007 season, Akkemik sampled 15 trees at the crest of the Bickici watershed for tree-ring analysis. Sampling extended from trees standing literally on the rim of the canyon to remote stands of cedar and pine high in the Tauros range. Five samples were Juniper, five samples are Black pine (Austrian pine) and the last five were Lebanon cedar (Taurus cedar). According to the dendrochronological results, cedar and juniper trees were timbered more extensively than Black pine trees. The oldest black pine tree was 765 years old, the oldest cedar tree was 409 years old, and the oldest juniper found was 364 years old. With respect to the juniper trees, two eras of deforestation appear evident: the first occurred around 1650 AD, and second around 1750. Regarding the cedar trees the timbering era appears to date to the 1600s. For pine trees, the timbering experience appears to have occurred during the 1500s. In other words the 16th and 17th centuries AD would appear to have been a time of intense timbering activities in the Bickici highland region.

Tree No	Location	Tree type	x_coord	y_coord	Elevation (m)
AKC1	Akcal	<i>Cedrus libani</i>	457356	4041533	1796
AKC2	Akcal	<i>Cedrus libani</i>	457391	4041516	1809
AKC3	Akcal	<i>Juniper sp.</i>	457473	4041510	1826
AKC4	Akcal	<i>Juniper sp.</i>	457424	4041475	1806
AKC5	Akcal	<i>Cedrus libani</i>	457392	4041483	1796
MEV6	Mevlutlu Y.	<i>Cedrus libani</i>	455022	4040702	1765
MEV7	Mevlutlu Y.	<i>Juniper sp.</i>	454553	4040585	1741
MEV8	Mevlutlu Y.	<i>Cedrus libani</i>	455950	4040719	1721
MEV9	Mevlutlu Y.	<i>Pinus nigra</i>	453210	4040878	1662
MAH10	Maha Y.	<i>Pinus nigra</i>	450917	4037901	1453
MAH11	Maha Y.	<i>Pinus nigra</i>	450944	4037823	1466
MAH12	Maha Y.	<i>Pinus nigra</i>	450879	4037802	1483
SUG13	Sügözü	<i>Juniper sp.</i>	451335	4044573	1601
SUG14	Sügözü	<i>Pinus nigra</i>	451327	4034658	1598
SUG15	Sügözü	<i>Juniper sp.</i>	451283	4034453	1587

Table 1: RCSP 2007, Sampled Trees, locations, types, coordinates, and elevation

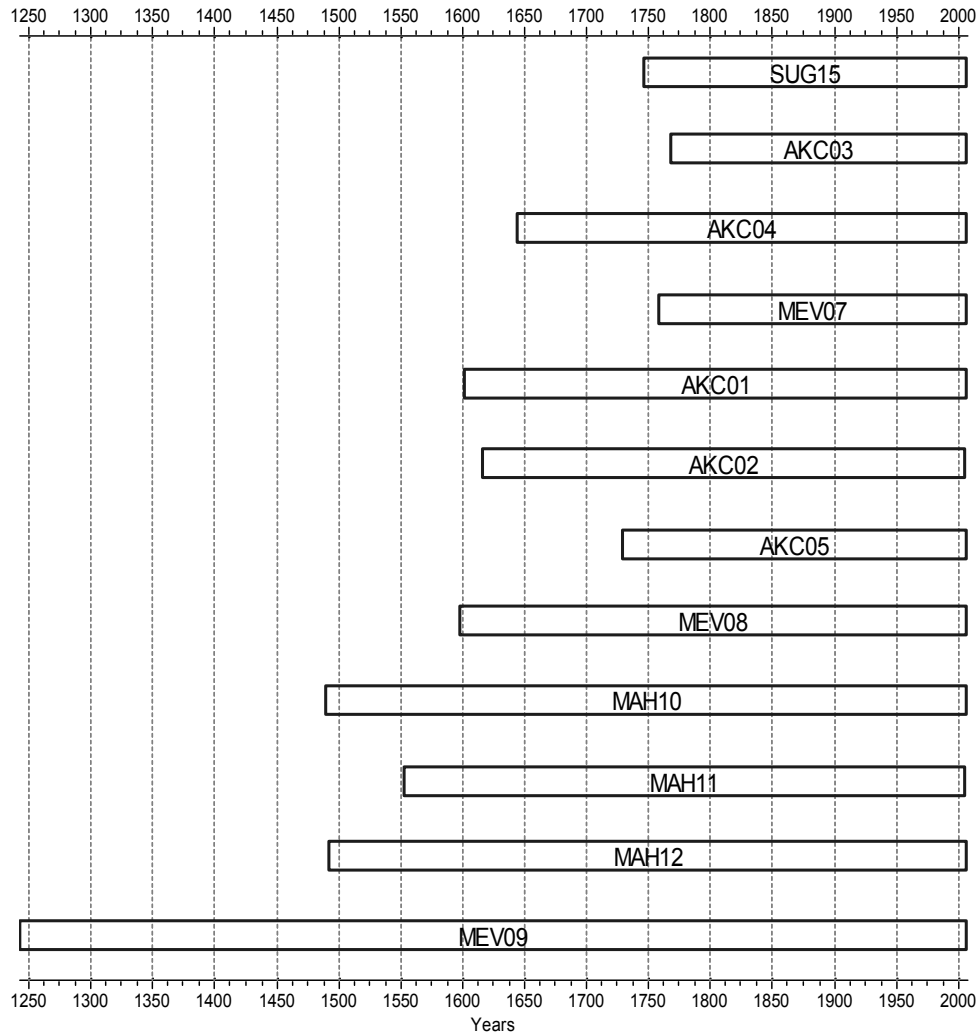


Figure 1: *Tree Ring Dates for the Trees Sampled in 2007; the first four are juniper; the next four are cedar, the last four are black pine, with MEV09 being the oldest sampled tree.*

Pedestrian Survey in the Taşeli Plateau



Image 12: View of the Remains at Yunt

Two days after the trench work the team returned to Sügözü Yayla and camped at the local soccer field in preparation to conduct pedestrian survey in the vicinity of the excavation pit. Beginning in the large rock formations above the pit the team walked two preliminary transect units, one amid the rocks and another in a narrow field beside the road leading east along the rim of the canyon. A minimal sherd scatter of Roman era coarseware was recorded during this brief foray conducted just before dusk. The following day the team was led by a local villager across the highland plateau to a large site that proved to be Yunt. To get there the team drove more than 30 km in jeeps across flat treeless meadow land at the crest of the mountain. The team began to process remains at the site when it was informed by local authorities that Yunt lay beyond the limits of the survey area (beyond the district of Gazipasha). Work was accordingly suspended, though we have preserved our record of processed pottery.

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