
SUMMARIES

PART ONE: BIBLE, HISTORY AND ARCHAEOLOGY

Iron Age Cave Settlements in the Land of Benjamin's Frontier Desert

Yuval Peleg

The land of Benjamin's frontier desert is an area that is characterized with a relatively small amount of rain, but still capable to be used for agriculture or pasture. In this area, from Ma'ale Adumim in the south to Ma'ale Ephraim in the north, several sites dating to the Iron Age period were surveyed and excavated. The main element in these sites is the existence of many caves used for dwelling alongside poor dwellings.

The use of natural caves as a temporary or permanent dwelling place is well known and can be found even today in southern Hebron hills. These natural caves have some advantages, such as requiring minimum investment on the part of the inhabitants, and remaining warm during the winter and cool in summer. The fact that caves were in use for dwelling is known, for example, from two biblical stories. In one ne Lot sat in a cave after he went up from Zoar (Genesis 19:30) and the other is when Elijah the Prophet used a cave as a temporary residence (I Kings 19:9).

Four such sites were located in the area under discussion. Two of them were partly excavated (Kh. Abu Mussarah and Kh. Harabat 'Uda) and two were only surveyed (Kh. Bani Fadel and Kh. En-Najama). In three of these sites Iron Age I pottery was found, and all four sites contained Iron Age II pottery including bowls that characterize the Judean kingdom during the 7th-6th centuries B.C.E. The existence of such bowls in the two northern sites and particularly in Kh. Bani Fadel raises the question of the northern border of the Judean kingdom after the Assyrian conquest of the Northern kingdom, especially during the reign of king Josiah.

Samaria-Sebaste Tombs

Dalit Regev and Uzi Greenfeld

The Samaria-Sebaste necropolis extends over the western and northern slopes of the Tel, but its full range extends to a belt of tombs located about one kilometer to the south and west of Samaria. The western edges of Tel Samaria-Sebaste have been recently excavated during salvage excavations on behalf of SOAJS. In addition to seven tombs and dwelling caves at the slopes of the Tel (1-2, 4-7 & 9), two other nearby tombs (8 & 10) were unearthed as a result of construction projects on the Shechem-Jenin road west of Tel Samaria, and initiated by USAID. The Samaria necropolis as revealed in the excavated tombs is architecturally and stylistically diverse. Three or four types of rock-cut burial caves in this cemetery include the following: a bench tomb (T1), arcosolia tomb (T4), loculi tombs (T6, T7, T8 and T10), and what may be a shaft tomb incorporated in a later loculi tomb (T5).

The excavations revealed finds from the Iron Age II until the Mamluk period, but most of the later finds originated from dwelling caves two and nine. The finds include: three Samarian stone sarcophagi, glass vessels, metal objects, and pottery. This article focuses on the tombs and the sarcophagi, as well as on the glass and metal finds. All the tombs were used during the late Hellenistic and the Roman periods.

A Jewish Village From the Second Temple Period at El Khirbeh, Shoham Hill Ten

Ofer Sion and Yehudah Rapuano

The site of El Khirbeh is situated on a rocky hillock east of the town of Shoham, on the western fringes of Mt. Ephraim and the foothills of Samaria. This area has few springs and for this reason cisterns for rainwater storage are found hewn in the soft rock.

Archaeological research in the area began towards the end of the nineteenth century with the work of V. Guérin, C. R. Conder and H. H. Kitchener and continued throughout the twentieth century with the work of I. Finkelstein and S. Dar. The first survey that included the site was that of the Map of Lod undertaken at the beginning of the 1970's by R. Gofna and Y. Beit-Arieh. At the beginning of the 1990's an archeological excavation was carried out by Y. Nadleman, in which approximately 20% of the site was exposed.

We excavated part of a Hellenistic farm house from the third to fourth centuries BCE, a village from the second century BCE to the early second

century CE and the remains of a Byzantine village from the fourth to fifth centuries CE. Moreover, there was also a sophisticated winepress there that was built no earlier than the second half of the fourth century and as well as another structure which was also excavated. Quarries extend over 12 dunam and a tomb dating from the second to first centuries BCE, evidently from the days of the Hasmoneans was discovered. According to the finds of the excavations, the site was first settled in the Hellenistic period as part of a system of prosperous villages. An area of buildings and installations dating to the third and second centuries that seems to have been part of a farmhouse or small village was found. The first level was destroyed as a result of the Hasmonean Revolt and its aftershocks.

A *miqveh* discovered on the site as well as stone tools, coins and ceramic finds suggest that the new inhabitants of the site were Jewish. The town prospered in the latter years of the Second Temple period. It was not possible to determine the size of the village by means of our excavations, although it is clear that the complex extending over the western side of the site could not have exceeded 14.5 dunam.

The site survived the Great Revolt, and although it was not destroyed, it never returned to its original splendor. Evidence shows that during the period between the revolts the occupation of the site was minimal and ceased after the Second Revolt. The site remained abandoned until the beginning of the Byzantine period in the fourth century CE when there was a wave of settlement in the general area resulting in large, developed settlements. The site continued to flourish until its demise during the course of the sixth century.

It seems likely that the instability that was characteristic of the area in the fifth to sixth centuries because of the Samaritan uprisings that disturbed the other villages in the area, also affected our site.

Khirbet el-Jafir (West) – A Rural Settlement of the Second Temple Period in the El-Jib Highland

Binyamin Har-Even

During the summer of 2010 a rescue excavation was conducted at Khirbet el-Jafir (West) located in Giv'at Ze'ev. This rural settlement was built on the southern slope of a ridge at the western side of the El-Jib highland, seven km northwest of Jerusalem by the main road (Ma'ale Beit-Horon Road) from the lowland to Jerusalem.

The excavations revealed the remains of a dwelling compound stretching over approximately half an acre and this dwelling compound was probably

used as a residence for an extended family. The compound plan includes several rooms and facilities, including a kitchen with five cooking *tabuns*, plastered ritual bath with three descending staircases and an industrial zone with lime kilns.

The excavation results indicate that the site was in use during the Second Temple period, from the late Hellenistic period to 70 CE, and ceased to exist after the destruction of the Temple. The finds include pottery, stone vessels and a hoard of about two hundred Hasmonaean coins.

In the Footsteps of Ancient Documents and Inscriptions – Hiding Complexes in the Southern Hebron Hills

Eitan Klein and Dvir Raviv

The names of six ancient Jewish settlements which existed in the Southern Hebron Hills during the period between the two Jewish Revolts (70 -135 CE.) are known from documents that were found in the Judean Desert and from an inscription found in a Jewish mausoleum in Tiberias. In light of the spread of the Bar-Kokhba Revolt coins and their discovery in ancient sites in Southern Hebron Hills, it is accepted today that the Jewish inhabitants of this area participated in the revolt. Despite this theory and as opposed to other areas in Judea which took an active part in the revolt, few hiding complexes were found in Southern Hebron Hills until recently.

During 2010 a fieldwork was conducted by the authors of this article at those ancient sites mentioned above. We assume that if these sites were settled by Jews during the Bar-Kokhba Revolt, it should be possible to locate in some of them underground hiding complexes from the Early Roman period. Over the course of the fieldwork, underground spaces connected one to the other by hewn burrows that allow passage only by crawling were found in four out of the six sites mentioned above. Sometimes the burrows were hewn with sharp angle turns and with level changes. In most of these underground complexes the characteristic architectural plan suggests that they were used as hideouts, probably during the Bar-Kokhba Revolt.

The discovery of hiding complexes at these sites enriches our knowledge of the history of this area and constitutes additional evidence of the active participation of the Jewish inhabitants in the Southern Hebron Hills in the time of the Bar-Kokhba Revolt.

A Byzantine Church and an Underground Hiding-Complex from the Bar-Kokhba Revolt at Horvat Midras in the Judean Shephelah

Amir Ganor, Alon Klein, Rina Avner and Boaz Zissu

During 2010 and January 2011 the Israel Antiquities Authority initiated a salvage excavation at Horvat Midras, a large archaeological site in the central Judean Shephelah, following antiquities looting at the site.

A lavishly decorated Byzantine church was unearthed. The church is a basilica with a monumental entrance including two decorated doorposts and a massive four meter long ornamented stone lintel. The entrance leads into a central nave flanked by two aisles and ended with an *apsis*. Among the architectural elements found inside were marble bases, marble columns, and *Corinthian* marble capitals. The marble was most likely imported from Asia Minor. The church floor was covered with a lavishly decorated mosaic adorned with geometric designs, floral motifs and a variety of fauna including a leopard, bear, birds, a lioness in a hunting scene, swimming fish and more. Behind and underneath the *apsis* a tomb and a *baptisterium* were discovered. Inside the tomb there is a passage into an underground rock-cut system branching out under the entire site.

The lavishly decorated church was apparently built in the 6th century CE over the remains of a large public building, of similar dimensions, dated to the 4th and 5th centuries. Underneath the church, structures and rock-cut chambers were uncovered. The chambers are connected by burrows forming a typical hiding system. These remains belong to a substantial Jewish village from the Second Temple period, which was finally destroyed in the Bar-Kokhba revolt.

Some scholars have suggested identifying the tomb of the prophet Zachariah mentioned by Byzantine pilgrims, at this site. Their suggestion is based upon the site's location and the description of Zachariah's tomb in the Madaba mosaic map. This proposal will be discussed by the present writers elsewhere.

Mapping Agricultural Systems in the Foothills of Samaria

Moti Haiman

In the framework of an environmental study, ancient agricultural systems of the Byzantine and Early Islamic periods have been mapped by GPS in order to create a digitized infrastructure for further environmental GIS_GPS supported studies. The area studied in the past year spans at the western foothills of Samaria from Modiin to Zur Natan. The results indicate the existence of two types of agricultural systems.

One type, related to autochthonous traditional agriculture, includes a variety of small wine presses, oil presses, and burial caves distributed in a limited area around villages consisting of several dozen structures about 300-500 meters from the periphery. The chronological framework of this type spans from the late Iron Age to the Byzantine period. The second type includes the components of runoff agriculture such as terraced wadis, rocky slopes installations, square watchtowers, stone heaps, and industrial wine presses. In contrast to the limited distribution of autochthonous agriculture, evidence of this type is scattered throughout the entire area. Extensive presence of monasteries, churches, and chapels in direct contact with that type of agriculture reflects the role of the churches in the establishment and management of the framework of settlement. The chronological framework of this type is limited to a comparison with the first type and is dated to the 6-8th Centuries C E.

It is assumed that the enormous effort to terrace large-scale areas in the desert and in cultivated regions, as well as the establishment of large-scale settlement, was a result of the Byzantine Imperial initiative to reorganize Palestine under Emperor Justinian (527-565). Based on the prominent presence of monasteries and churches, it seems that the Byzantine Church, as representative of the Empire, led this type of settlement.

The 1242 Templar Raid on Nablus - a Crucial Event in the History of the Crusader Kingdom

Shlomo Lotan

During the late twelfth century and the first half of the thirteenth century, the Crusader Kingdom of Jerusalem has been characterized by havoc, military disintegration, and political stagnation. Despite several periods of recovery and construction, the leaders of the kingdom, the clergy, and the members of the Military Orders had failed to consolidate the Crusader Kingdom and to

rebuild it to its prime as it had been in the twelfth century. This had changed in the forties of the thirteenth century when an opportunity had emerged to improve the status of the Crusader Kingdom. The Crusaders won and restored extensive areas in the Galilee south to Jerusalem, following the peace treaties signed with the rival Ayyubid forces in Egypt and Damascus.

The tendency in the Crusader Kingdom to favor a peace treaty with Egypt was resented by the Templars who supported the Ayyubid from Damascus. The Templars had undertaken a raid for reasons of revenge against the Muslim settlements in Hebron and Nablus. The raid on Nablus in 1242 wreaked havoc and trepidation on the local population trapped in the main mosque in the city which was then put ablaze. The Templars had argued that their activities in the city had resulted from Muslim violations of the peace treaties signed earlier. This raid in Nablus was commemorated in the Templar church in Perugia, one of the main Templar sites in Italy, where painted frescoes depict and describe it together with the story of the Templars and their heritage in the Crusader Kingdom.

This essay reviews the military and political events which preceded that bloody raid in Nablus. It will also look into the way in which the Templars had chosen to memorialize their victory in Nablus. Finally, it will examine the impact of these events on the regional balance of power and on the deterioration of the Crusader Kingdom which had led to the defeat of the Christians in the battle of Hirbiya

(La Forbie) in 1244 and to the concentration of the Crusaders in limited areas along the Mediterranean coast until the final downfall of the kingdom of Jerusalem in 1291.

The Stone Inscriptions at Rachel's Tomb

Ze'ev H. Erlich (Jabo)

Following a change to the structure of Rachel's Tomb, two Hebrew inscriptions from before the 17th century were discovered. The inscriptions include the names of two individuals and their fathers: Yosef ben Yaakov and Flak ben Haim. An examination of the names, especially of the documents of the Muslim court of Jerusalem at that time, shows that these two men were among the leaders of the Jewish community in Jerusalem in the mid-16th century. Today we know what their function and involvement in the life of the community were, as well as some of the tensions and conflicts between them. We have no way of determining what caused these two less-well-known leaders of the Jerusalem community to engrave their names in the lower crevices of the art of Rachel's Tomb.

The discovery of these two inscriptions from over 450 years ago, prompted us to carry out a comprehensive survey of all the Hebrew inscriptions engraved in stone in the entire tomb complex. Besides the two aforementioned inscriptions, there are another nine inscriptions from the time of Moses Montefiore (1841) up to and after the Six Days War (1967). These include inscriptions expressing appreciation for the renovation of the structure, for the digging of a well (this inscription is covered by two graffiti), the installation of a sink, an inscription that cites Jeremiah's prophecy of consolation, a memorial plaque for a deceased woman, a plaque expressing gratitude for the restoration of prayer at the site, and a plaque displaying the Ten Commandments. Two reported inscriptions have not yet been located and it is possible that they were not set in the walls of the structure, although they were intended to be. Perhaps they will be discovered somewhere else one day.

The British Royal Air Force Facing Arab Terror in Samaria in 1936

Rivka Yermiash

This article deals with the RAF in Palestine between April and October 1936. This period has been defined as the first phase of the Arab revolt. It presents the reasons behind Britain's decision to alter its common practice of maintaining security within its colonies. This was done by relegating the authority to do so from the Ministry of War to the Air Ministry and the influence of Air Control policy on the Jewish community during the years of Arab revolt.

The article focuses on the decisions made by the commander of RAF units Air Commodore Richard Pierce, who was also General Commander of the troops (GOC) in Palestine, and the High Commissioner Sir Arthur Wauchope. It also analyses their relationship and its impact on events. While most scholars assumed that both officials were in a constant state of conflict, the article presents a different view.

Although the infantry troops increased in numbers and despite the deteriorating situation, the option of replacing the High Command was not considered until late in the revolt's development. We discuss the reasons for this as well as the question of why a martial law was not imposed earlier, despite voices within the civilian community to do so.

The question of whether the RAF had the upper hand in maintaining security is analyzed vis-à-vis its anti-terror and guerilla warfare tactics on one hand and the armed gang's superiority on the other. Why did the RAF find it so difficult to provide an adequate response?

Eshkol and the Settlements: Between “Establishing Facts on the Ground” and Political Arrangements

Yossi Goldstein

In this paper I want to demonstrate that ever since he first became a political figure, Levi Eshkol advanced the interests of the working settler movement and sought ways to turn it into a factor of first-order significance in the Jewish Yishuv. In his system of Zionist values, a top priority was always “gaining territory” in the Land of Israel. Ever since he made aliyah in the first decade of the twentieth century, he viewed the creation of Jewish settlements throughout the country as an essential strategic objective of the Zionist undertaking.

However, if we consider the biography of this leader, who held some of the highest senior public posts in the Jewish Yishuv in Palestine and later in Israel, it appears that a two-fold nature existed in his stance on this issue. Precisely at the moment of crucial political decision-making, when it would seem that an unambiguous attitude toward the settler movement should have come to the fore, other considerations would prevail in his thinking. These additional or counter-considerations did not square with the standards that he adhered to throughout his career. These considerations stemmed from the political values of the time as Eshkol understood them. Thus, he did everything in his power to bring about the creation of more and more “Tower and Palisade” settlements (1937) and to thwart the partition of Palestine, seeing both of these as ways of “establishing facts on the ground.” However, he also supported the conclusions of the Peel Commission with enthusiasm. This was the same commission which determined that even his own settlement, Deganyah Bet, was to be part of the Arab state! Similarly, Eshkol devoted all his energies to fighting against the Morrison-Grady Committee’s recommendations (1946) by setting up eleven settlements in the Negev (also known as the Eleven Points in the Negev), but then, a year later, he agreed to the Partition Plan. As Israel’s Prime Minister, he acted in the same way. He sided wholeheartedly with the Israeli government’s “Secret Plan” of relinquishing Israel’s hold on all of the territories seized during the Six Day War. Yet at the same time, he also supported annexing Greater Jerusalem and setting up settlements on those same territories, as ways of “establishing facts on the ground.”

On the one hand, this two-fold nature in Eshkol’s settlement policy can be explained by his distrust that the Arabs and the Palestinians would agree to live in peace with Israel; on the other hand, there was his unshakeable faith that peace would some day definitively arrive and this would require far reaching concessions, which would be painful and difficult.

The Modiin Region – Constructing the Memory of the Maccabees

Israel Rozenon and Yossi Spanier

In the years preceding the establishment of the State of Israel, the significance of the Modiin region was mainly based on the historical importance of the ceremonies commemorating its history and these attracted many visitors. Such visits and ceremonies were important especially to those who wanted to understand the significance of the Land and they were especially prevalent during Chanukah, a holiday which was particularly important for the secular Zionists. Eventually a race with a torch was instituted.

There was no Jewish settlement in the pre-State Modiin region. Modiin remained significant although devoid of settlements. After the establishment of the State the memories changed.

The Tombs of the Maccabees continue to be an important site. They stand out and continued to attract various activities as those described above. Yet the site has no special status, nor is there anything in the national calendar to mark the unofficial status it enjoyed before the establishment of the State.

This article tries to identify certain elements in the area of Modiin and to place them in a memory map. This is a complicated task. Modiin can be seen as a "test site" for finding ways to establish memorials in non-urban areas.

The Balsam from Ein-Gedi and the Story of Masada

Zohar Amar

The Opobalsamum or Balm of Judea [also Balsam] was considered the best-known and most expensive perfume in the world during the Hellenistic and Roman periods. In this article we propose that the conquest of the fortress that symbolizes the end of the Jewish Revolt was connected, among other reasons, to the role played by balsam in the national and economic struggle waged between the Jews and the Romans. The precious balsam product which was produced at Ein-Gedi was amassed in its storehouses, and this must somehow be connected to the takeover of Masada and Ein-Gedi in 68 CE by the Sicarii.

The Romans never gave up their desire to transfer the balsam orchards to its own charge; the suppression of the Jewish revolt offered a pretext as well as an opportunity for them to do so. With the destruction of the Second Temple the Romans seized control of the balsam orchards, and branches of the tree were displayed in Rome in the triumphal processions along with the Jewish captives and the golden menorah from the Temple. Pliny relates how the balsam

became an economic asset that brought great sums of money into the treasury of Rome. This might explain the persistent Roman siege of Masada, which included bringing in enormous quantities of manpower and the tremendous military investment in infrastructure, such as building army camps, some of which operated many years after the destruction of the Temple. It seems that the Roman effort was designed to safeguard the balsam orchards in Ein-Gedi and its precious product.

While the historical sources referring to the Balm of Judah in this period are many, the archeological findings relating directly to this plant are scant. In fact, all of the findings that have been uncovered until the present day are from Masada: papyri and epigraphic inscriptions that mention its name. All of these pieces of evidence hint that in the heroic tale of Masada, balsam played an important role, more of which is concealed than revealed.

PART TWO: CULTURE, SOCIETY, AND POLITICS

Subjective Well-Being and Social Support Networks among Elderly Living in Samaria and Benjamin

Ahuva Even-Zohar

The study dealt with subjective well-being and social support networks among elderly persons living in communal localities in the Samaria and Benjamin regions of Israel. Some of the elderly residents had been living in those localities for many years and others moved there after they reached old age. The sample consisted of 107 elderly residents who lived in the region for ideological or religious reasons, and 96 who lived there for other reasons. Differences between the two groups were examined with regard to subjective well-being, regard to formal support networks (government services), and informal support networks (family members, friends, and neighbors). The findings indicate that the levels of subjective well-being and informal social support networks among the elderly participants who lived in the area for ideological or religious reasons were higher than among their counterparts who lived there for other reasons. In addition, the findings revealed that the main predictor of subjective well-being was informal social support. Regarding differences between the two groups in the use of formal support services for elderly persons, the findings revealed that the participants who lived in the area for reasons that were not ideological or religious used welfare services and day centers for the elderly more often than the other group of participants. No differences between the two groups were found with regard to visits to clubs for pensioners. The findings provide insights into the situation of the elderly population of the Samaria and Benjamin regions, and can be useful in developing services that meet their needs.

The Experience of Older Adults who Relocate to be Near their Children in Judea and Samaria: Narratives of Family and Place

Chaya Possick, Shulamit Bar-Shalom and Irit Nasi

This qualitative study examines the migration experience and place attachment of elderly adults who relocated from cities within the Green Line to settlements in Samaria in which their children reside. Fourteen people aged 69-85 (ten women, four men) living in eight different settlements for at least one year, were interviewed. Categorical content analysis was performed on the interview texts according to the Grounded Theory method.

With one exception, all of the participants expressed strong place identity with the settlement. Their place attachment was based on landscape attachment, place ideology, and above all social place attachment—community belonging and familial ties. Needs that are not adequately met in the settlement were: medical treatment, government and professional services, and transportation. The interviewees did not express worry or fear for their safety or security in the settlement, but are very much concerned about the political threat of forced relocation.

On a theoretical level the study explicates the intertwined, circular process of attachment of the relocated elderly to place and family and demonstrates the contribution of mobility to rootedness and continuity of place attachment.

Attachment Dimensions, Meaning in Life and Life Satisfaction among Religious Female Students with Multiple Role Involvement

Abira Reizer

This study examines the contribution of attachment dimensions and multiple role involvement on the perceptions of meaning and satisfaction in life among religious students. Three hypotheses are formulated: (1) Multiple role involvements predict meaning and satisfaction in life (2) attachment dimensions predict meaning and satisfaction in life (3) attachment dimensions will moderate the associations between multiple role involvements, meaning and satisfaction in life. 107 religious women, studying in the Ariel University Center completed self-report scales tapping attachment dimensions, life satisfaction, and two aspects of meaning in life: presence of meaning and search for meaning. All participants had children under five years old. 54 had

two roles: as a student and as a mother. 53 had three roles: as student, as mother, and as salaried worker.

It was found that students who had three roles reported less meaning and satisfaction in life compared to students who have two roles. Findings also showed that attachment anxiety and attachment avoidance made a unique contribution to having meaning and satisfaction in life. In addition, attachment anxiety moderated the link between attachment avoidance and the presence of meaning. Finally, attachment anxiety predicts searching for meaning. Attachment dimensions didn't moderate the associations between multiple role involvement and meaning or satisfaction of life. Results indicating the unique contribution of multiple role demands and attachment personality dimensions to meaning and satisfaction of life.

Youth Trips to Hebron until 1948

Yoram Elmakias

Youth trips to the Negev and the Judean Desert are an important milestone in establishing the historical awareness of the younger generations at the beginning of Zionism. The connection to uncharted regions, and particularly to sites of historical significance, strengthened the Zionist awareness at the time of Israel's independence. During these trips, the youth mainly explored the Judean Desert and the northern Negev, but often included in these trips were additional sites in Judea such as Bethlehem, Beit Zur, Hebron, Yatta, Ziff, Maon and more.

The entities that organized these trips were organized by various movements with different ideological views including: "Maccabi", "Hashomer Hatzair", "HaNoar HaLomed VeHaOved", "Bnei-Akiva", "Chugei Hameshotetim" and the "Palmach". Often a tour of the city of Hebron was included.

The tours should be divided = into two main periods: 1. until the riots of 1929 - when a Jewish community existed in Hebron 2. after the riots until the 1940s when there was no longer a Jewish community in the city. Sometimes Hebron was only a starting point for trips in the Judean desert, but many times the tour in Hebron was an organic part of the journey.

Evidence from archives and newspapers of the time relates to the uniqueness of many trips that especially included Hebron. This uniqueness relates to the fact that Hebron was always considered part of the "Old Settlement", isolated from the Zionist settlement activity centers. In spite of this it aroused the interest of the youth movements of the "Yishuv Hadash". The groups visited it's the following sites there: Tomb of the Patriarchs, Abraham Synagogue, "Eshel Avraham", and more.

PART THREE: ENVIRONMENT, NATURAL SCIENCES AND AGRICULTURE

Preliminary Analysis of Mammals' Activity along the West Bank Barrier

Amir Perelberg, Amit Dolev, Moty Shefy and Amos Sabah

The security barrier along the West Bank causes the fragmentation of natural habitats and separates between adjacent mammal populations. The Israel Nature and Parks Authority intends to establish a long-term monitoring system to analyze the temporal and spatial effects of the barrier on the activity of these animals, in order to guide necessary maintenance and conservation actions. This study assesses whether use of the Israeli Defense Forces security cameras is feasible for this purpose.

We analyzed 217 video recordings, each one-minute long, collected during the winter and spring of 2010. Seasonally – more animals were observed in the spring, and diurnally, where as most animals were seen at night. Wild mammals were spatially more sensitive to anthropogenic disturbances than domestic (possibly feral) animals. Although the barrier is impassable for most animals, it is also characterized by relatively low human presence, and thus relatively higher activity of wild animals. But wild boars and common gazelles, the two most commonly observed wild animals, were mostly seen in open fields and in olive plantations, and walking near the barrier along the fence. In contrast, most dogs were observed along the barrier's paved road. More intense data collection will also provide estimation of the population and trends of wild animals. The large number of observed free-ranging dogs indicates an urgent need for maintenance measures to minimize their impact in the open areas.

The Lower Jordan River: A Major Loss of Biodiversity Following Years of Degradation

Sarig Gafny, Banan Al Sheikh, Hillel Glassman and Samer Talози

The Lower Jordan River (LJR) underwent over 100 years of human alteration. Beginning in the 1930's, with the construction of the Degania dam at the exit from Lake Kinneret, the main freshwater sources of the LJR have been diverted and the average annual flow declined from 1.3×10^9 to less than 3×10^7 cubic m per year. The quality of the LJR water has also been severely impaired, turning from pristine to a mixture of salty water, fish pond wastewater and poorly treated effluents. Several studies have indicated the effect of the LJR degradation on various components of the LJR ecosystem, but none of the above examined the implication of the LJR ecosystem. The goal of the current study was to comment on the current ecosystem health of the LJR using macroinvertebrates – a common tool in assessing ecosystem integrity and health.

To characterize the current status of the habitat quality in the LJR (including morphological, hydrological, and water quality parameters) as well as macroinvertebrate assemblages, the LJR was sampled twice during 2009 in five stations along the LJR from Gesher in the north downstream to the Dead Sea. Whenever possible the data were compared to pre perturbation conditions and to three reference sites outside the LJR system. Our data indicate that while organic matter and nutrient inputs from effluents into the LJR decline with distance from the pollution source, the salinity level increases, being twice as high downstream of the LJR compared to its level upstream, at the confluence with the Yarmouk River. The deterioration in both the quantity and quality of the LJR water is clearly reflected in the macroinvertebrate assemblages along the river. Taxa richness has declined by c.a. 50% compared to both past conditions and to reference sites. Sensitive taxa such as caddisflies (Trichoptera) and mayflies (Ephemeroptera) which were reasonably abundant in the past and in the reference sites were completely absent from the LJR while tolerant taxa such as oligochaetes and chironomids flourish. These results emphasize the current poor health of the LJR ecosystem and call for rehabilitation efforts of this once richest river in the area.

Evaluation of Soil Preservation Treatments on Cave Drip Quality and Quantity in the Sif Cave

Tali Dolgov (Suvorova), Yaakov Anker, Alexander Gimburg, Gil Eshel and Nathan Sheffer

The Sif cave is a unique natural laboratory equipped with facilities for drip-water capturing and measurements. This system was previously studied and an infiltration model was developed. In the current study this model is calibrated against the application of two low impact soil treatments, which are considered as soil preserving. The surface above the cave is divided into three pre-determined plots with each being drained into a different storage tank; two plots were treated and the third was kept natural for reference. Drip-water rate was measured continuously and chemical analysis was done periodically.

The results indicate that in reference to the natural plot and to previous behavior of the plots: a. in the mulched plot infiltration increased owing to higher roughness of the surface and lower evaporation rate; in addition, drip-water salinity was reduced probably due to the same reasons. b. In the plot that was treated by endogenous plowing, infiltration rate increased with the first rains, but decreased with the rains that followed, probably owing to the destruction of soil crusts, which were later recovered. Drip-water salinity increased at first probably since accumulated salts were released by the plowing and then washed into the cave from the runoff. Monitoring the cave will continue all through the next two years in order to have sufficient database for delineation of these trends.

The Effect of "*Shmita*" Mandated Pruning Methods on Grape Yield and Quality.

Drori Elyashiv, Netzer Yishay, Ariel Azriel and Harkabi Eran

The project deals with the effects of "*Shmita*" mandated pruning methods on yield and quality of wine grapes and wines produced from them. In the *Shmita* or Sabbatical year the act of pruning is forbidden according to the Torah: "But in the seventh year, the land shall have a complete rest, a Sabbath to the Lord; you shall not sow your field, nor shall you prune your vineyard" (Leviticus, 25:4). Not pruning the grapevine might lead to severe agro-technical results and therefore research regarding a halachic solution is important.

In this project we characterize the effects on yield and wine quality of five pruning methods: those in the *Shmita* year and two years following. The treatments include: not pruning, removal of cordons, sculpturing (pruning all

annual growth to the cordon base), mechanical pruning, and regular pruning plus breaking the branch (using a damaged clipper and then breaking the branch). The last method is referred to as the control treatment. The experiment is being conducted in the vineyards of Shilo, with Cabernet Sauvignon and Merlot varieties.

The first year's results show a significant reduction in labor hours required when using the alternative methods that is only a third of the time needed for the control method. Also, vast differences in yields were observed. There were no yields in the cordon removal method, a third of the control yields for the sculpturing method, similar and somewhat higher for the mechanic pruning, and very high yields for the non-pruned vines. Although treatments with high yields had a delay in ripening, all crops matured to the degree needed for wine making and maintaining sufficient acid levels. The number of clusters per vine was in correlation with the yield while cluster and berry size were in opposite correlation. Vines not pruned gave hundreds of small clusters bearing very small berries. When analyzing wine color, vines not pruned yielded the highest intensity while sculpturing the lowest.

Primary Steps in the Application of a Skilled Irrigation Model for Quality Vine Grapes Grown in the Mountain Region

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The aim of the current research is the development of a practical irrigation model for quality wine grapes grown in the mountainous region in Israel. In this paper we present the results of the first two research seasons.

The model is based on vine water consumption (ETc) values, measured in previous work with table grapes grown in the Lachish region during the past seven years. In table grapes we formulated the connection between Leaf Area Index (LAI) to Crop Coefficient (Kc): $Kc=0.2609XLAI+0.3645$ (Netzer et al. 2009).

We assumed that the differences in stomata conductance between table grapes and wine grapes is negligible; hence, transpiration rate is mainly determined by canopy area and by environmental conditions. Frequent LAI measurements enabled the calculation of Kc of the vineyard according to the above equation. As is widely known, ETc can be calculated according to the following equation: $ETc = ET_o * Kc$. Reference evapotranspiration (ETo) was calculated according to the modified Penman–Monteith equation from meteorological data measured by an adjacent meteorological station.

The research was conducted in a commercial *Cabernet Sauvignon* vineyard in Dolev, located 550 m above sea level. Five irrigation treatments were carried out in the vineyard: three irrigation levels were calculated according to constant irrigation factors: 0.2, 0.35 and 0.5 of K_c and two according to "dynamic irrigation factors": 0.2-0.2-0.5 and 0.5-0.2-0.2 of K_c during phenological stages I, II and III respectively. Midday stem water potential was measured weekly, as were periodical measurements of LAI.

Irrigation level significantly affected total yield, number of clusters, and berry diameter and weight. When the treatment received high irrigation amounts during stage I and reduced irrigation amounts during stages II and III, high yields with improved wine quality were obtained. These promising results should be confirmed during the next research years.

