Extending the Olive Branch: Research into the prehistoric exploitation of the olive tree and its fruit the southern Levant

The Catherine Southwell-Keely Travel Grant 2016 Report

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It is difficult to imagine our lives without the olive, in at least one of its forms. For those of us fortunate enough to have spent time around the beautiful Mediterranean, it is also difficult to imagine that landscape without the distinctive and, to my mind, regal and evocative presence of the olive tree. Despite this, our understanding of the origins of tree crop exploitation in prehistory is limited when compared with our much greater understanding of the process and impact of human exploitation of cereal crops.

Pliny writing in the *Naturalis Historia* argued that:

"*except for the vine, there is no plant which bears a fruit of as great importance as the olive*"

But what of the importance of the olive tree, its fruit and its oil before Pliny was extolling its virtues? The form and scale of prehistoric human interaction with the iconic olive tree remains unclear. Olive domestication is generally believed to have first occurred in the eastern Mediterranean in the southern Levant though we have a limited understanding of the earliest impact of anthropogenic pressure on the olive tree itself, and the broader environment in which it grew. In areas where olive trees would have formed part of the natural environment in prehistory, little is understood about the role they played in the lives of the communities that shared that environment, particularly during the Neolithic and Chalcolithic periods. This is despite the significant presence of olive remains in archaeological occupation deposits during these early periods. Given the olive's contemporary importance in cultural, economic and even political terms, how might we be able to conceptualise its importance in these terms as far as back as 8000 years ago? My Doctoral research allows me the great privilege of working on the archaeobotanical assemblages of two sites key to the attempt to answer this question - Pella and Teleilat Ghassul, located in the Hashemite Kingdom of Jordan.

Teleilat Ghassul in the southern Jordan Valley has been pivotal in gaining an understanding of this early human-olive interaction. The presence at the site of significant quantities of olive fruit remains and olive wood charcoal dating to the Chalcolithic period demonstrates significant olive exploitation by the Ghassul inhabitants much earlier than had previously been thought. The archaeobotanical work by Reinder Neef and John Meadows in the 1980-90's at the site produced evidence that suggests that the Ghassul residents were cultivating olive trees, as it is unlikely, given the climate in the south of the Valley, that the trees would have occurred naturally at the site. John Meadow's morphological analysis of olive endocarps, or pits, demonstrated a significant size increase, and a significant reduction in variation in the size of the stones through time at the site suggesting the Ghassul residents were managing the olive trees in the area, possibly by selecting trees with larger, fleshier fruit, or perhaps by simply removing less desirable trees.

Pella, as most of you know, has a long occupation history, beginning in the Late Neolithic period. The earliest contexts at Pella provide us with consistent evidence for exploitation of olive trees by the Pella inhabitants. This is exciting as it is among the earliest evidence in the world for olive exploitation, beginning as early as 6200BC. In addition, we also have what is potentially some of the world's earliest evidence for small-scale, domestic production of olive oil dating to approx. 5000BC. Gaining further understanding of the purpose, scale and impact of this exploitation in these earliest periods at Pella will form part of my PhD research and while the nature of this exploitation remains unclear, there is no doubt that the Pella inhabitants were interacting with olive trees much earlier than previously thought.

Figure 1 Olive fragments or *jift* (the by-product of pressing of olives for oil) taken from Trench 32G 509.1

The methodology on which my research would be based involves the use of proxies for understanding human-woodland interactions in the form of the identification and analysis of seeds, fruit and wood charcoal. Other proxy data will also be investigated, including correlation of data from the study with existing regional pollen records and genetic investigations into olive tree domestication, in addition to investigation of relevant stone tool and pottery vessel types and potential evidence for installations for the production of oil. Analysis of both the fruit remains and the wood charcoal at these sites will allow a greater understanding of how and why these early interactions with olive took place and what the impact on the surrounding environment and woodland composition may have been as a result of the increased exploitation of these trees. I also hope that these analyses will allow me to look at the change through time of the form and scale of human-olive interaction to provide some insights into what sociocultural change olive exploitation may have brought about in the organisation of daily life at Pella. What kind of changes were wrought by the introduction and availability of what may have been seen as a "luxury" resource that was more than simply another component of a subsistence regime?

Teleilat Ghassul has already provided fantastic evidence for people manipulating a valuable resource in their environment but there is more to be done. Further investigation and analysis of the wood charcoal at Ghassul will allow a greater understanding of the woodland species being exploited at the site, the climate during the Late Neolithic and Chalcolithic periods in the region and the role the

olive tree played in the economic life of the people of Ghassul. At Pella, the long occupation sequence provides me with an unparalleled assemblage through time to explore the changing relationship of the people living at Pella and Teleilat Ghassul with an important resource in their landscape and a resource that went on to become one of the most important and iconic tree crops in the world.

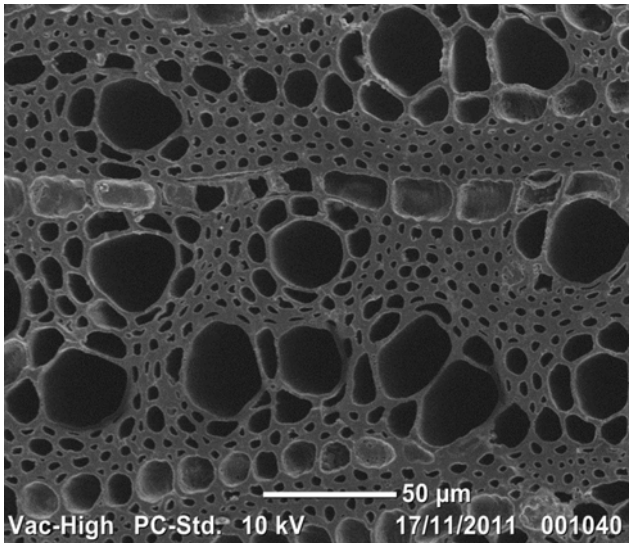

Figure 2 Vessel structure of a wood charcoal fragment from Pella viewed at 500x magnification

Figure 3 Late Neolithic olive pit from Pella Trench 32G 509.1

I am immensely grateful to NEAF for awarding me the Catherine Southwell-Keely Grant which allowed me to undertake a research trip to Europe in April/May of last year. In addition to giving me the opportunity to travel to Vienna to attend and present at the ICAANE conference, I was able to meet with scholars in Europe and the United Kingdom to discuss different theoretical and methodological approaches to my research. Presenting at ICAANE gave me the opportunity to talk about the updated archaeobotanical research and results from Pella and also establish some excellent contacts for the future.

The Grant also enabled me to travel to Berlin and Liverpool. As mentioned earlier, Dr Reinder Neef is one of the foremost archaeobotanists working in the Near East. Dr Neef has worked extensively in Jordan and wrote a seminal paper in the 90's on olive domestication, a paper on which I, and many other researchers, have relied heavily. I spent a very enjoyable and interesting day with Dr Neef and his colleagues in their lab at the Deutsches Archäologisches Institut (DAI) in the beautiful Berlin suburb of Podbielskiallee. I confess sitting in an historic laboratory, drinking pots of tea and chatting with the scholar whose work has informed much of my own was hardly a tough day at the office, particularly as our discussions continued over lunch at a nearby beer garden on a beautiful, sunny Berlin day! I also spent time going through the extensive reference collection of plant remains, both seeds and fruits in addition to wood charcoal that Dr Neef has compiled over decades of fieldwork.

Figure 4 Part of Dr Reinder Neef's wood reference collection at the DAI in Berlin

Figure 5 Dr Reinder Neef and colleague, DAI, Berlin and the beautiful cabinet dating from the time of the GDR that houses part of Dr Neef's plant reference collection

Dr Eleni Asouti from Liverpool University in the UK is one of the world's foremost experts in wood charcoal analysis. I spent a valuable day with Dr Asouti discussing some of the methodological challenges of the wood charcoal analysis component of my research and we discussed the possibility of me returning to Liverpool to receive tuition from her to improve my wood charcoal identification and analysis skills. I was also able to visit with Professor Douglas Baird, Head of Department of Archaeology, Classics and Egyptology who co-directed excavations at the site of Tel Shuna North in the north Jordan Valley. Tel Shuna North is another site key to understanding human-olive interaction in the region and Professor Baird has offered me the opportunity to use the archaeobotanical assemblage from the site as an adjunct to my PhD research. I was able to spend some time in the impressive lab facility at the University doing some preliminary analysis of the assemblage. I also met and chatted with Professor Lin Foxhall, Head of School of Histories, Languages and Cultures and author of one of the definitive books on Classical period olive exploitation.

Figure 6 The Liverpool University archaeobotany lab

The trip would not have happened without NEAF's support and I thank them very much for their support of my research endeavours.