C O R N E L L
U N I V E R S I T Y

The Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology

Aegean (and Near Eastern) Dendrochronology Project
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AEGEAN DENDROCHRONOLOGY PROJECT, DECEMBER 2012

New Projects and Grant Successes

I am delighted to report that the Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology has been successful with two major grant applications during 2012. The first is a project titled "Checking and Correcting the Timescale for the Archaeology of the East Mediterranean-Near East in Later Prehistory & Protohistory: Investigating the Scale of a Radiocarbon Offset", which won funding from the National Science Foundation (NSF), Award Number 1219315. This project is a collaboration between PI Sturt Manning and the Cornell Laboratory and Co-PI Tim Jull and the University of Arizona Accelerator Mass Spectrometry Laboratory. To quote the first paragraph of the NSF abstract:

Coring a Juniper tree in Jordan

"With National Science Foundation (NSF) support, Drs. Sturt Manning and Timothy Jull, together with a postdoctoral scholar, other colleagues, and US students, will collect and analyze tree-rings from southern Jordan, Europe and North America in order to investigate and establish what is the appropriate radiocarbon timeline for archaeological and environmental dating in the southern Levant and east Mediterranean region. This issue is critical for determining the correct timeframe for Biblical Archaeology – and so early Biblical history – as well as the timeframes and histories of the other important ancient cultures of the Near East and east Mediterranean region. Over the last two decades there has been much unresolved debate on this topic."

For further details, see:
http://nsf.gov/awardsearch/showAward?AWD_ID=1219315

and

http://www.news.cornell.edu/stories/Sept12/DendroNSF.html

Dr. Linah Ababneh is joining the Cornell Laboratory in 2013 and will work especially on this project. In collaboration with the rest of the lab team, this will involve a major effort on building and extending the dendrochronology available from Juniper trees (from living trees and from historic structures – like the example to right from the Petra area in southern Jordan which yielded multi-century tree-ring samples – and archaeological sites) especially from southern Jordan.

The second major new project is the Lab's involvement with Sturt as a Co-Applicant in the major international multidisciplinary research collaboration "Computational Research on the Ancient Near East: An Archaeological Data Integration, Simulation, and 3-D Visualization Initiative" (CRANE), funded by the Social Sciences and Humanities Research Council of Canada, and led by Tim Harrison of the University of Toronto. This will see fieldwork and lab work at Cornell on archaeological and palaeoenvironmental charcoal/tree-ring samples, and the development and analysis of archaeological chronologies, over the next several years.

Work in 2012: in brief

(i) Constantinople Dendrochronology

2012 saw the conclusion of work at Cornell on samples from the enormous Marmaray Project in Istanbul which has dominated work in the laboratory since 2005. A paper on the current best dating of the floating oak dendrochronology was published by Manning, Pearson, Griggs and Kromer, 2012, "Dendro-wiggle-match placement of an oak tree-ring chronology from mid-first millennium AD Constantinople", in the *Antiquity* Project Gallery section: see http://antiquity.ac.uk/projgall/manning331/. A longer paper on the dendrochronology with some discussion was published by Pearson, C.L. et al., 2012, "Dendroarchaeology of the mid-first millennium AD in Constantinople", *Journal of Archaeological Science* 39: 3402-3414.

(ii) Cyprus – Pinus brutia chronologies and precipitation history

A reliable forecast of the probability of future droughts is important to Cyprus due to a number of sustained droughts at the end of the 20th century and the importance of tourism to the Cypriot economy. Completed now with some extra fieldwork in spring 2012 by Sturt with help from Lente Van Brempt and Olivier Bonnerot (of the University of Cyprus) – very ironically in pouring rain and storms (that challenged even the supposedly water proof marker pens) – in the (then) under-sampled Rhoudias Valley area of Cyprus, our Cypriot drought reconstruction from *Pinus brutia* samples provides a 250-years history of drought around the Troodos Mountains. This record provides the data necessary to forecast the frequency and severity of multi-year droughts over time: the multi-year drought occurs in periods of 10-20 years, but only once in every 80-100 years. We are close to finishing a paper for publication led by Carol Griggs, and hope to see this off early in 2013.

(iii) Southern Levant

Dr. Linah Ababneh and Sturt sampled living juniper trees and timbers from some historic structures in 2012 in the region of ancient Petra. Our work was made possible by Engineers Eid Al-Zouabi and Al-Shourman (Forestry Department of the Jordanian Ministry of Agriculture), Ameen Al-Duqs (Forestry Department of the Jordanian Ministry of Agriculture); Ali Awamleh (Taibat Zaman Hotel General Manager) and the Jordan Tourism Resort Company; and Dr. Barbara Porter and Dr. Christopher Tuttle of The American Center of Oriental Research (ACOR), Amman. Kate Seufer – Research Aide in the Cornell lab this year – has been hard at work on these (and other) samples, and they will be a focus of work in 2012.

Brita Lorentzen meanwhile continued work on dendro materials from the region, and will hopefully defend her PhD dissertation before summer 2013. Among several things, Brita has been working on the analysis and dating of the Akko 1 shipwreck (a collaboration between the Cornell lab and the Leon Recanati Institute for Maritime Studies at the University of Haifa), and we expect a paper on this to be submitted early in 2013. She has also worked on the wood remains from the important site of Jaffa and presented a poster at the November 2012 Annual Meeting of the American Schools of Oriental Research on this work: Lorentzen, Kuniholm, Wazny, Burke and Peilstöcker, "Dendrochronological and Botanical Analyses of Wood Remains from the Jaffa Cultural Heritage Project Excavations during the 2011-2012 Seasons".

(iv) East Mediterranean Cedar

A collaboration of Sara Rich, and several colleagues – Patrick Degryse and Karel Van Lerberghe – of the Katholieke Universiteit Leuven, and Frank Vanhaecke of Ghent University, and Sturt has continued work investigating whether strontium (Sr) isotopic analysis ($^{87}Sr/^{86}Sr$ ratios) can be of use to provenance archaeological cedar wood from the east Mediterranean region. A first article is now published: Rich, Manning, Degryse, Vanhaecke and Van Lerberghe, 2012, "Strontium Strontium isotopic and tree-ring signatures of Cedrus brevifolia in Cyprus". *Journal of Analytical Atomic Spectrometry* 27: 796-806. Sara is hard at work on finishing her PhD on ancient cedar ship remains in the east Mediterranean and Near East at the University of Leuven. Future publications will detail some very interesting recent findings on archaeological cases.

(v) Aegean dendro & radiocarbon

2012 saw the final publication of primary Aegean and east Mediterranean tree-ring based high-precision radiocarbon data from the long-running East Mediterranean Radiocarbon Comparison Project (EMRCP) in a paper by Manning and Kromer, 2012, in the journal *Radiocarbon* 54(3-4): 449-474. This work was been generously supported at various times by the Institute for Aegean Prehistory (INSTAP), NERSC Canada, and Cornell University.

I also note that early in 2012 Douglas J. Keenan kindly highlighted a few unfortunate typos and errors in the published text of Manning, S.W. and Kromer, B. 2011, "Radiocarbon Dating Iron Age Gordion and the Early Phrygian

Destruction in Particular", in C.B. Rose and G. Darbyshire (eds.), *The New Chronology of Iron Age Gordion*: 123-153. Gordion Special Studies VI. Philadelphia: University Museum of Archaeology and Anthropology. A corrected PDF of this paper (addressing these typos/errors), and with some additional illustrations and discussion, can be found at: http://www.academia.edu/1110679/Manning_S.W._and_Kromer_B._2011._Radiocarbon_Dating_Iron_Age_Gordion_and_the_Early_Phrygian_Destruction_in_Particular._In_C.B._Rose_and_G._Darbyshire_eds._The_New_Chronology_of_Iron_Age_Gordion_123-153._Gordion_Special_StudiesVI._Philadelphia_University_of_Pennsylvania_Museum_of_Archaeology_and_Anthropology. The typos/corrections and new material alone can also be found at: http://dendro.cornell.edu/articles/manning2011b-corrections.pdf.

(vi) North America

On the New York & NE North American dendro front, in 2012, led by Carol Griggs, we have successfully dated a house and barn in Ithaca (helped by the students from this Fall's Dendrochronology Class), the Ham House near Kingston, Ontario, and one barn in the "Cracker Box Palace Farm" (Alasa Farms) up on Lake Ontario, with more historic work in progress.

A paper has been submitted for review on the history, construction, and timber sources of 11 building phases in eight houses, built in the 18th-early 19th centuries, in the Schenectady-Rensselaer area. The houses are the Mabee Farm (4 building phases) in Rotterdam; the Brouwer and Yates Houses, plus the remodeled blockhouse on Front Street in Schenectady; the Pieter and Daniel Winne Houses in Bethlehem (data provided by E.R. Cook, Lamont Doherty Earth Observatory); and the Crailo in Rensselaer.

The dendrohydrologic and dendroecologic analyses of nine hemlock logs found buried in the bend of the Genesee River near Houghton, NY, has likewise been submitted for publication. The logs fell over and were buried by a major undercut and/or landslide sometime between 615 and 630 AD; their 293-year chronology begins in the mid-4th century AD.

And off the beaten track: wood used for a rather sophisticated dugout found on Long Island this past year was sent by the NY State Museum for species identification and possible dating. The species is Opepe (*Nauclea diderrichii*) from western Africa, commonly used in marine structures, but tree-ring dating of this tropical species is not (yet) possible.

And…

Much more that does not fit in this brief report, including a major paper that should be of interest to those interested in the Cornell lab that Sturt was a co-author on: McCormick, M., et al., 2012, "Climate Change during and after the Roman Empire: Reconstructing the Past from Scientific and Historical Evidence", *Journal of Interdisciplinary History* xliii: 169-220.

During 2012, we enjoyed visits to work in the lab from Sara Rich, Linah Ababneh and Lior Regev.

Finally, Charlotte Pearson and Peter Brewer (and their new baby Sophie) leave the lab at the end of 2012 to take up positions at the University of Arizona. Pete remains a Visiting Scholar at Cornell. I thank them very much for 6 years of massive contributions at Cornell, and wish them every success with their future careers.

Your Support

Your support of the work of the ADP over many years has been greatly appreciated and invaluable. Many things would not have happened without it. Thank you very much.

If you wish to support the on-going Cornell dendro work in the Aegean, east Mediterranean and southern Levant, then we would very much appreciate your continued support. Please send any gifts to:

✉ ➔ Cornell University, Box 223623, Pittsburgh, PA 15251-2623, USA.

Please indicate that your check is for the Cornell Tree-Ring Laboratory, Fund Number #013900.

💻 Or please consider giving online. If so, visit: https://www.giving.cornell.edu/give/index.cfm and please indicate that your gift should go to the Cornell Tree-Ring Laboratory, Fund Number #013900.

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