

## **AEGEAN DENDROCHRONOLOGY PROJECT: ANNOUNCEMENT & LETTER, DECEMBER 2011**

### *The Times They Are A-Changin'*

Starting in 2012 there is a new strategic partnership in Mediterranean dendrochronology centered in the USA: the Malcolm and Carolyn Wiener Laboratory for Aegean and Near Eastern Dendrochronology at Cornell has agreed upon an exciting collaboration with the Laboratory of Tree Ring Research (LTRR – founded in 1937 by the pioneer of modern dendrochronology, A.E. Douglass) at the University of Arizona in Tucson. This will see a merged effort with shared databases and collections. The idea is synergy and lots more bang for the buck. This collaboration will extend to associated efforts in various dendro-related studies, and, for example, to radiocarbon dating linked to the Accelerator Mass Spectrometry Laboratory at the University of Arizona.

As part of this new initiative, the NSF project “Linking the Dendrochronology of Northern Europe and the Mediterranean: Yenikapı” under Peter Ian Kuniholm and Tomasz Wazny will relocate and will be based out of the LTRR – although some work will continue in 2012 at Cornell especially by Charlotte Pearson and students from the Dendrochronology course taught by Sturt and Charlotte. Future SE Europe work will center at the LTRR.

Work at Cornell will instead focus on the exciting new field and research projects we have started on the dendrochronology and dendroarchaeology of the Southern Levant (Jordan and Israel in particular at present), and the east and central Mediterranean (e.g. current work in Cyprus).

Other changes: after many, many years, Mary Jaye Bruce has decided to leave the lab to pursue study in Massage Therapy. We will miss her greatly and wish her well on her new path and thank her for all the work she has done for the lab and for everyone in it.

### **ADP Work in 2011: in brief**

#### *(i) Constantinople Dendrochronology*

As for each of the past 6 years, work on samples from the enormous Marmaray Project in Istanbul has dominated work in the laboratory (see ADP newsletters 2005-2010). Tomasz Wazny collected again in summer 2011, and Charlotte and Carol Griggs have put together a 213-year dendrochronology comprising 86 samples for the mid-first millennium AD. In doing so they have worked closely with Peter Brewer who has integrated 3D mapping into the Lab’s Corina software. This function and the flexibility of the new Tree-Ring Data Standard for storing complex archaeological metadata have made it possible to organize and analyze the Marmaray Project data in a far more efficient manner. Charlotte has taken advantage of this to produce an interdisciplinary paper focusing on the new chronology. This paper is a big achievement for the whole Cornell Dendro team and special mentions should be made regarding the contributions of Kate Seuffer, LeAnn Canady, Kayla Altland, Jessica Herlich and Jennifer Watkins, also student work by Xan Stepp, Ariel Aicher, Mark Dominianni, Sam Fuller, Sarah Johnson, Sarah Simpson, and Becky Wrench. The chronology has a dendro placement of AD 398-610; meanwhile, Sturt’s detailed radiocarbon-wiggle-match suggests a most likely date AD 402-614 +12/-14 (within a 95.4% probability range). While the latter does not prove the former, it certainly suggests that the tentative dendro date is plausible. Future work will hopefully nail down a firm crossdate beyond any doubt. When publication details of these studies are available they will be listed on our website.

#### *(ii) Cyprus – Pinus brutia chronologies and precipitation history*

Using tree-ring samples collected over the last 7 years in Cyprus, Carol, Charlotte, Brita Lorentzen and Sturt have studied samples of *Pinus brutia* growing at four sites of varying elevations across the Troodos Massif in west to central Cyprus. Carol has been able to develop an annual September-August regional precipitation reconstruction for AD 1830-2004. A key result is that *P. brutia* is common at lower elevations, and was used regularly in prehistoric through modern architecture on the island. In particular, one lower-elevation site is located on the edge of the Mesaoria Plain of central Cyprus, close to the mining area of prehistoric-modern Cyprus. Our assessment indicates that for west and central Cyprus there are 3 to 4 drought years every 30 years, and that sustained (that is 2-3 continuous years) droughts generally occur once every 30 years. We have submitted a paper to publish this work. It represents the first longer-term annual precipitation reconstruction for Cyprus at low to mid-elevations.

### **(iii) Southern Levant**

A new initiative on the dendrochronology of Jordan saw fieldwork in 2011, including around the Petra area in southern Jordan linked with the Brown University Petra Archaeology Project who kindly hosted us. (see <http://proteus.brown.edu/bupap/Home>). This saw Brita and Sturt work with collaborator Dr. Linah Ababneh and Jordanian colleagues. We are working especially on the long-lived *Juniperus phoenicea* trees (living and from historic structures). A poster presentation on the 2011 Petra area fieldwork was presented at the American Schools of Oriental Research (ASOR) meetings in San Francisco, November 2011. Brita was a fellow at the American Center of Oriental Research in Amman in Fall 2011, and also continued fieldwork in Israel during this time – including work on material from historic Jaffa – and continued work on underwater materials in collaboration with Leon Recanati, Institute for Maritime Studies, Haifa.

### **(iv) Software**

Peter Brewer continues to play a vital role in the lab, and for the wider dendrochronological community, developing a practical software environment for curating, managing, recording and using tree-ring samples: see <http://dendro.cornell.edu/corina/> and <http://www.tridas.org/> and <http://www.tridas.org/tricycle/>. Perhaps most exciting is a new collaboration with the Tree-Ring Laboratory at the Lamont-Doherty Earth Observatory of Columbia University: this leading tree-ring laboratory is starting to use our Cornell software as developed and managed by Pete. Other labs in the USA, New Zealand and Europe have expressed great interest in Corina, so once the initial trials at Lamont-Doherty are complete, we hope to expand use during 2012.

### **(v) East Mediterranean Cedar**

Sara Rich and colleagues Patrick Degryse and Karel Van Lerberghe at the Katholieke Universiteit Leuven, and Frank Vanhaecke of Ghent University, along with Sturt, are at the first stage of investigating whether strontium (Sr) isotopic analysis ( $^{87}\text{Sr}/^{86}\text{Sr}$  ratios) can be used to provenance archaeological cedar wood from the east Mediterranean region. Cedar was used in shipbuilding and many other roles in ancient Egypt and the Near East, and is usually assumed to be from Lebanon. However, other sources in the eastern Mediterranean region are certainly possible – the Taurus and Amanus Mountains in Turkey, the western Troodos in Cyprus, and perhaps Ansariyah in Syria. For example, a letter to the Egyptian Pharaoh found at el-Amarna from the king of Cyprus (Alashiya – EA35) from the mid-14<sup>th</sup> century BC refers to men of his country wanting payment for lumber – and this very well might have been for prized cedar wood. A ca. 600-year cedar chronology was developed from trees at two sites in Cyprus and  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios were obtained on this material. These results were compared to analyses run on samples of cedar from Lebanon and Turkey, with promising results. Sara has submitted a paper on this work for publication this month.

**And...** much more than in this brief letter. Please see the website at <http://dendro.cornell.edu>.

### **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. Going forward:

If you wish to support the work linked to the “Linking the Dendrochronology of Northern Europe and the Mediterranean: Yenikapı” project by Peter and Tomasz, then you should correspond with them at the LTRR (<http://ltrr.arizona.edu/>).

If you wish to support the on-going Cornell work in the Aegean and east and central Mediterranean, and the southern Levant and Cyprus, 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 ☞ 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.

Finally: Starting 2012, we are proposing to make the newsletter an electronic pdf version only to cut unnecessary costs (and tree-felling). Please send me your current email address if you wish to continue to receive the Cornell Laboratory’s annual newsletter. We will then email it to this email address you have sent. It will also (as previous newsletters) be available via the project website at <http://dendro.cornell.edu/reports.php>.

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