Mount Allison
Dendrochronology Lab

MAD Lab Report 2006-19

Anatomical Wood Analysis of the David Dixon Table, Sackville, New Brunswick

By

Natasha O Neill, Andre Robichaud and Colin P. Laroque

Anatomical Wood Analysis of the David Dixon Table, Sackville, New Brunswick

Table Of Contents

Abstract

The Mount Allison Dendrochronology (MAD) Lab was requested to conduct a wood analysis of an antique table owned by David Dixon. Two samples were taken using a razor blade, which were subsequently prepared for analysis using a Scanning Electron Microscope (SEM). Both samples were identified down to genus (maple and pine), but due to the unknown location of the original wood, the samples could not be positively identified down to species. Through a process of elimination it was concluded that if the samples were of local origin, the species would have to be white pine (*Pinus strobus*) and sugar maple (*Acer saccharum*).

Introduction

In the summer of 2005, the Mount Allison Dendrochronology Lab (MAD Lab) was contacted by David Dixon of Sackville, New Brunswick to conduct a wood analysis of an antique table. It was hoped that a positive identification of the wood, would perhaps lead to a dating of the table if enough ring pattern could be extracted from the pieces of the table.

The MAD Lab collected two small samples and processed them through a Scanning Electron Microscope (SEM) process to determine the tree species used in the construction of the table.

Sample Collection, Preparation and Analysis

Two samples were taken from David Dixon s table with a razor blade; one from the table s leg and the second from the table top. The small slivers of wood were tagged on site and delivered to the lab.

Samples extracted from the table were put through a scanning electron microscope (SEM) analysis to determine the species of the wood. Three different microscopic cuts of the wood sample are needed to perform a species diagnostic test on the unknown wood. For this reason, fresh cuts of the three different directions (tangential, radial, and transverse) of the wood were made for all samples put through the SEM analysis. The samples were then mounted on a SEM stem and coated with a gold covering to initiate the SEM process.

Scanning Electron Microscope Analysis Results

Figures 1 and 2 are of the sample from the table top. Wood anatomical features indicate that it is maple, although the species cannot be distinguished conclusively anatomically because of the particular properties of this branch of the maple family. Figure 3 shows the table leg sample. Anatomical features show that the wood is pine, most probably white pine *(Pinus strobus*) or a related species. Many European woods have anatomical equivalents that cannot be distinguished from North American woods. For example, the European stone pine (*Pinus cembra*) closely resembles the North American white pine on all cut directions. If the table was constructed outside of North America, or with wood brought in from outside of North America, the conclusions drawn from the SEM analysis could be quite different.

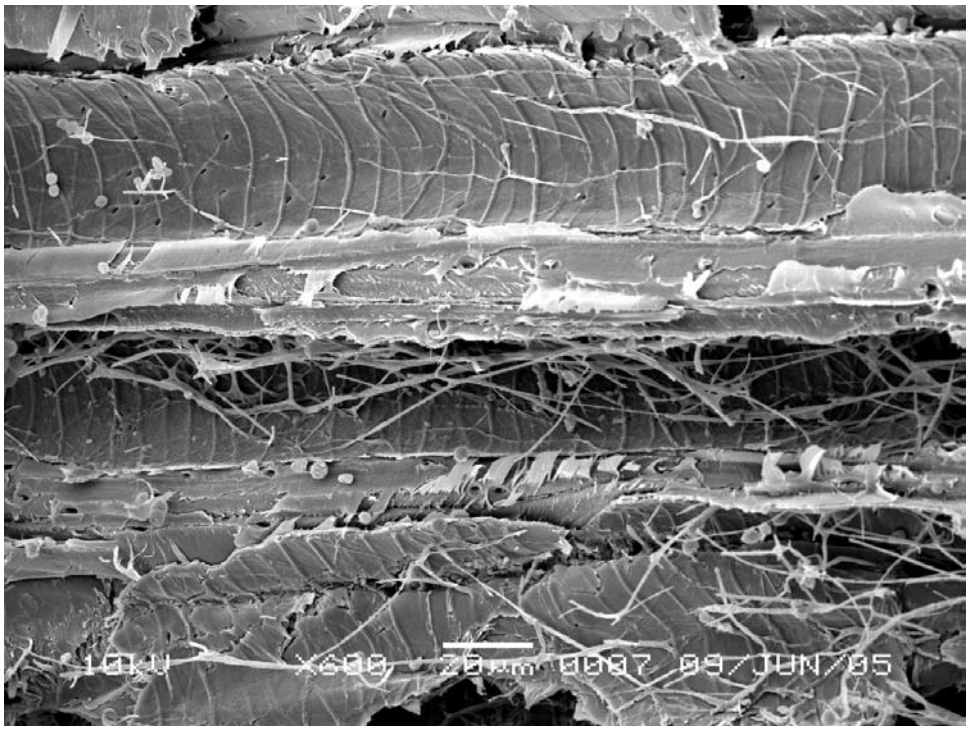

Figure 1- View of the interior of vessels showing spiral thickening, typical of the maple species.

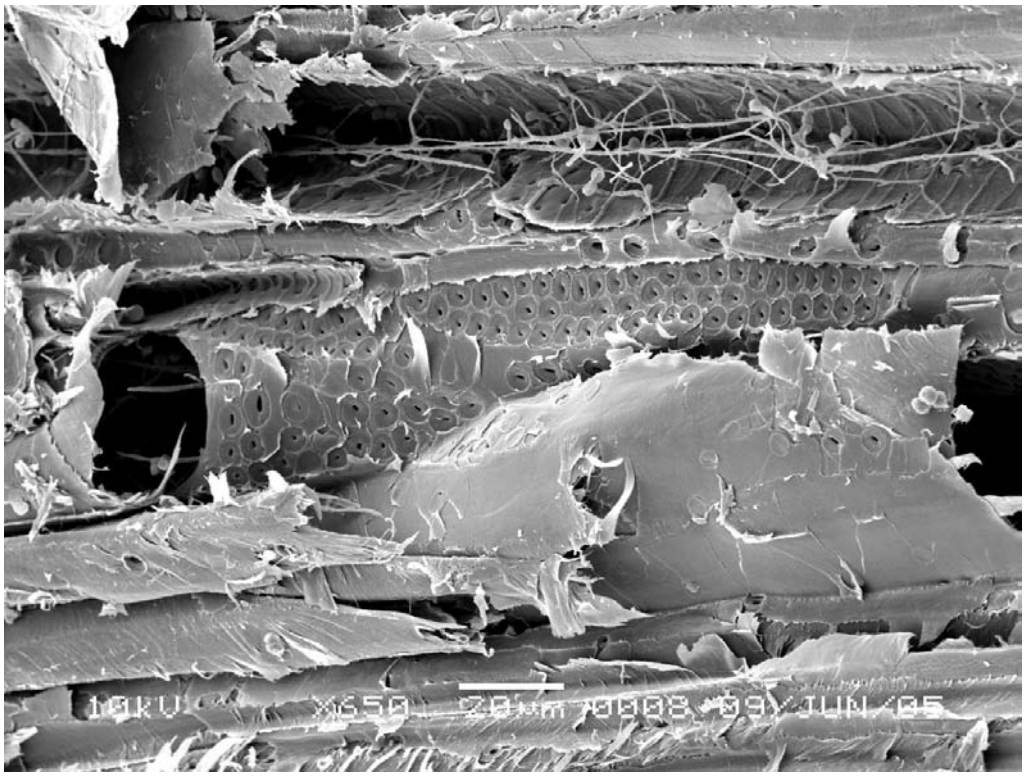

Figure 2- View of the exterior of a vessel and part of a simple perforation, typical of the maple species.

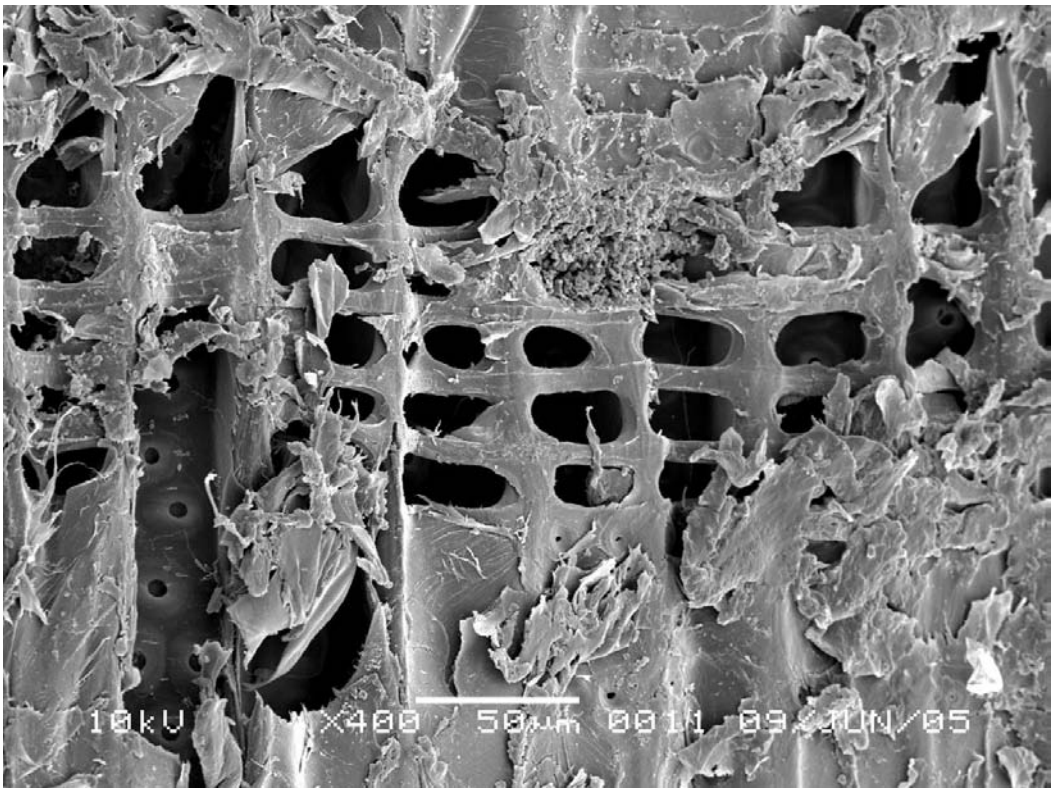

Figure 3- This radial view shows a ray with large window-like simple pits typical of white pine.

Conclusion

Through the use of the Scanning Electron Microscope, we were able to conclude that the David Dixon s antique table was constructed using both maple and pine. Both samples were identified down to genus (maple and pine), but due to the unknown location of the original wood, the samples could not be positively identified down to species. Through a process of elimination it was concluded that if the samples were of local origin, the species would have to be white pine (*Pinus strobus*) and sugar maple (*Acer saccharum*).

If a next step opportunity exists for the table, it would be to try to extract a workable series of ring measurements from either the table leg or the table top. Some existing growth chronologies do exist for the region that may perhaps span the interval when the local white pine table leg could have been constructed. There are other possible chances that new chronologies of white pine could also help, but they are still in a development stage. There are no current maple chronologies in the Maritimes, and the likelihood that such chronologies will ever be developed are remote. The source areas for such chronologies probably no longer exist.