Gulf of St. Lawrence Sunken Ship Hull Wood:

Identification and Tree-Ring Measurements

Bryan J. Mood, André Robichaud, and Colin P. Laroque

MAD Lab Report 2012-03

Mount Allison University, Department of Geography and the Environment
Mount Allison Dendrochronology Lab

Table of Contents

Abstract

To analyze the Gulf of St. Lawrence shipwreck wood, the Mount Allison Dendrochronology Laboratory conducted a wood identification analysis and tree-ring measurement analysis of the sample. Due to the cellular structures of the wood, it was found that the species was oak (*Quercus spp.*). Ring measurements indicate that the samples has a span of 31 years, making it possible to someday crossdate it with a living chronology in the future. Currently it does not fit with any chronology in the MAD Lab database.

Introduction

In the fall of 2011, the Mount Allison Dendrochronology Laboratory (MAD Lab) was contacted about a piece of ship hull wood found in the Gulf of St. Lawrence by Kevin Pauley. The sample was collected on September 23, 2010, while conducting a groundfish oceanographic survey in the Gulf of St. Lawrence aboard the research vessel CCG Teleost. It was collected during a 1.7 nm tow, at approximately 48º 11.280 north latitude, and 63º 12.317 west longitude.

The MAD Lab was asked to provide as much information on the wood as possible. The project methodology was to cut the sample to extract as much ring information as possible, as well as to discern the sample's species.

Methods

The sample provided was dry, and so it was sawn in two pieces after duct tape was applied to the exterior to strengthen the structure. Each piece was then sanded with progressively finer sandpaper grit: 80, 120, 220, 320, 400, and 600 grit. In the end, the samples were very smooth and the radial cell structures were clearly visible under a microscope (Figure 1). The sample's radial-growth increments were then measured using a high-resolution scanner (600 dpi) and WinDENDRO™ to a precision of 0.01 mm. Each half was measured twice and matched to each other.

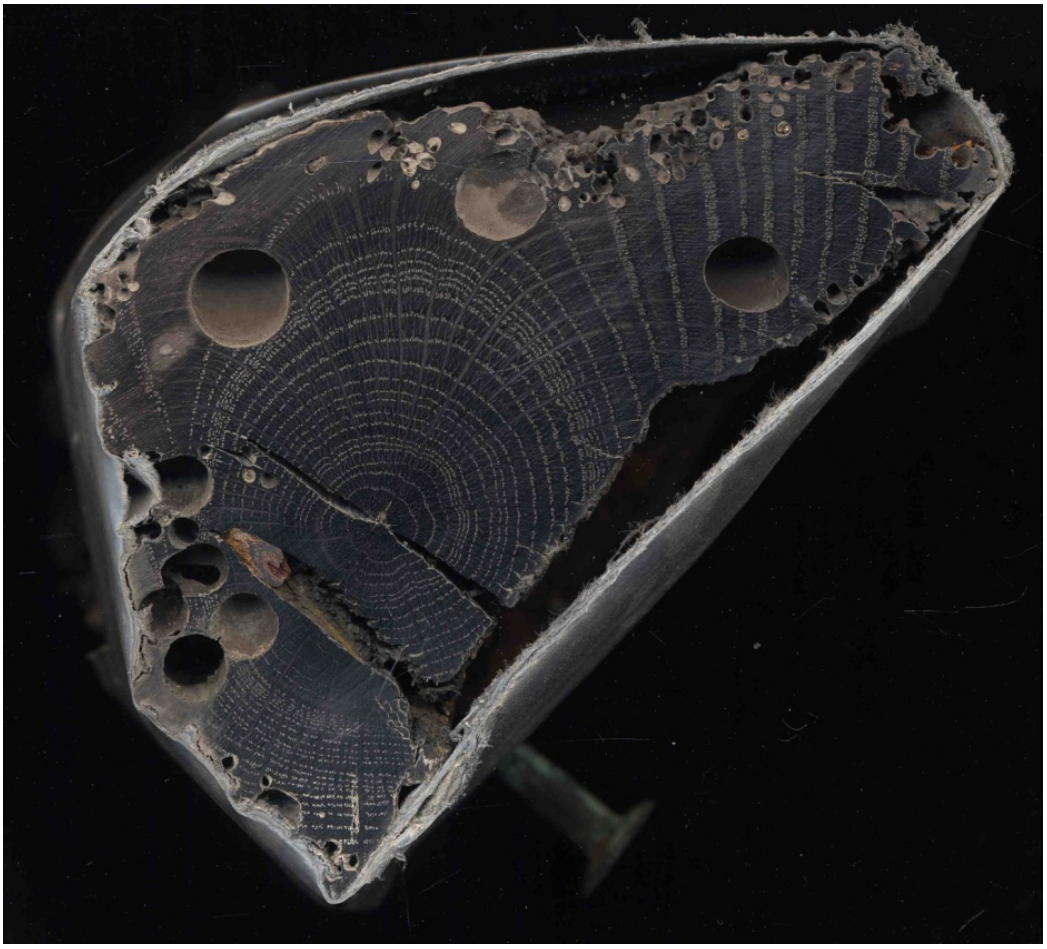

Figure 1: Image of sample (MAD Lab #11BDD01B) on the high-resolution scanner.

Results

The two segments had an average growth of 1.05 mm/year. MAD Lab sample #11BDD01A had a span of 31 years and sample #11BDD01B had a span of 30 years, for a total span of 31 years. The measurements, overlap, and their mean are demonstrated in Figure 2. Figure 2 illustrates detrended data using ARSTAN, and demonstrates the close similarity between the two samples. The overall radial structure and cellular structures of the wood properties indicates that the sample is an oak species (*Quercus spp.*) (Figure 3).

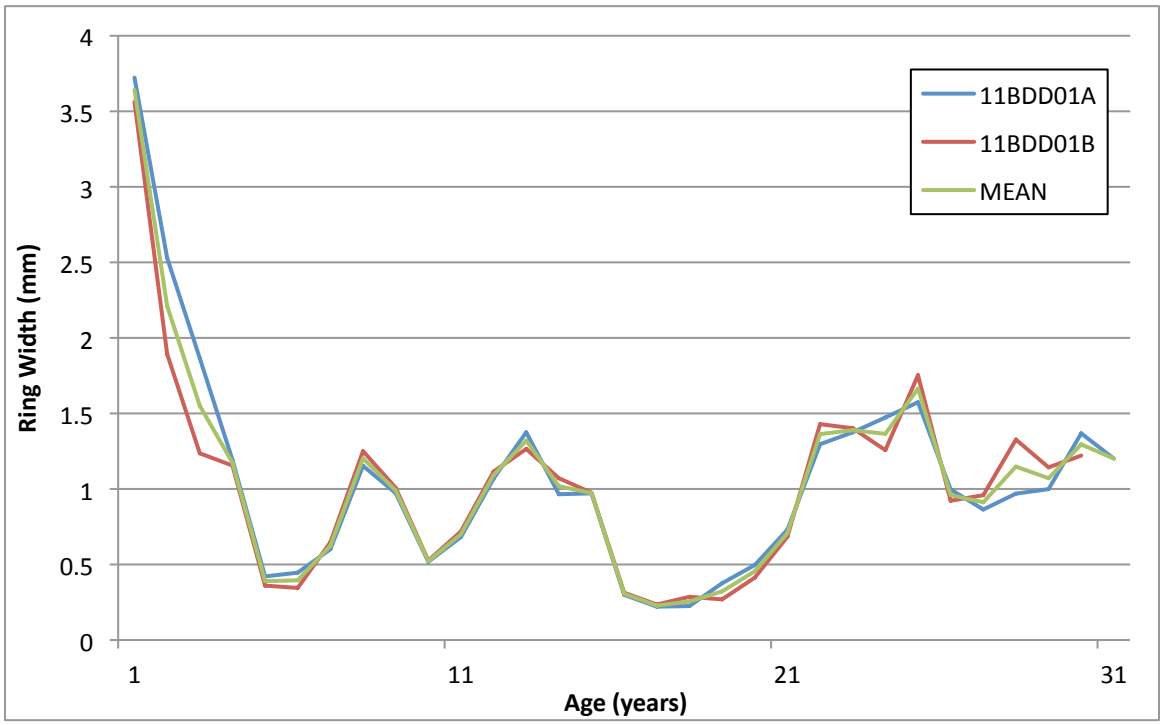

Figure 2: Figure of both samples and their mean. Similarities indicate a strong potential to crossdate with a living chronology if a base chronology could be found.

Figure 3: Close-up image of the wood characteristics.

Conclusion

Through measurements conducted by the Mount Allison Dendrochronolgy Lab, a radial growth pattern representing a 31-year span was established for the Gulf of St. Lawrence ship hull wood samples. This length of pattern should be sufficient to conduct further analysis, and should eventually allow a statistically significant crossdate to be formed against a live chronology if a base chronology can ever be found. All available local oak chronologies were tested, but no matches were found. Since this sample came form a ship, the origin of the wood may have been transported from a wide range of locations round the world. Currently, it is unknown where the sunken ship was built. Therefore, identifying a sufficient live chronology to crossdate the sample will remain a difficult puzzle.