Using dendrochronological methods to date birch bark harvesting scars from Cold Lake, Alberta

André Robichaud and Colin P. Laroque

MAD Lab Report 2007-08

Mount Allison Dendrochronology Laboratory,
Department of Geography and Environment,
Mount Allison University
October 28, 2007

Using dendrochronological methods to date birch bark harvesting scars from Cold Lake, Alberta

Table of Contents

Abstract

Six white birch (*Betula papyrifera* Marsh.) were collected by the Bison Historical Services Ltd. from a provincial recreation area near Cold Lake, Alberta. The samples were sent to the Mount Allison Dendrochronology Laboratory (MAD Lab) for bark harvest scar dating. A total of 18 healing lobe scars across all wedges were verified and were included in the results of this analysis. Together the scars suggest continuous activity within the group since 1936. If only primary scaring activity is used from each wedge sample as an indication of harvesting activity, then harvesting activity was conducted in 1936, 1952, 1959, 1974, 1976 and 1979 for the trees in this study.

Introduction

Six white birch wedges gathered by the Bison Historical Services Ltd. from the English Bay Provincial Recreation Area, Cold Lake, Alberta, were sent to the Mount Allison Dendrochronology Laboratory (MAD Lab) for bark harvest scar dating. Dendrochronology is a discipline that specializes in tree-ring research and is especially well suited for dating tree scars. A dendrochronological analysis was conducted by the MAD Lab on the birch wedges and the results are presented in this report.

Sample processing and methods

The six samples were sanded with electric hand sanders using paper of increasingly finer grain (up to 600 grit) to expose the tree rings and apparent scars on the wedges. The birch samples were collected in September of 2007 from live trees indicating that the 2007 growth ring was visible and had completed its biological development. Rings were counted from the 2007 outer ring backward in time to intercept scar dates. Healing lobes were obvious and allowed for precise dating of each scar within the wedges. In this manner all primary and secondary scaring visible on the path were aged on each wedge (Figure 1).

Figure 1 – Dr. Andre Robichaud reviews the tree-ring evidence contained in the ring pattern of sample WP15. Measurements and counts were conducted on the Velmex system with a precision of 0.001 mm.

Results and Discussion

Table 1 displays the results of the dendrochronological analysis. In three samples (014, 015 and 041), the first scars never entirely healed, leaving a crevice reaching into the tree where that scar initiated. Along the edges of the crevice of two of those samples (014 and 041), other smaller healing lobes were visible implying that bark may have been pealed off at subsequent years on the tree. Sample 011 also had secondary scars and sample 040 had a small healing lobe not yet closed off. A total of 18 healing lobe scars across all wedges were verified and were included in this analysis. Together the scars suggest continuous activity within the group since 1936-37. The intervals of wounding activity are variable within trees (range: 2 to 31 yrs; average: 10.6 yrs; median: 7.5 yrs). Other features were noted in some of the ring patterns, but alone they cannot be taken as direct proof of bark collection activity.

Table 1: Date of scars from birch wedges, Cold Lake, Alberta.

Waypoint #	**First primary scaring event**	**Other secondary scaring events**	**Other notable features**
011 Easting: 550993.05 Northing: 6049192.97	1952-53	1970-71 1994-95	-Very narrow rings at 1974 and 1989
014 Easting: 550712.94 Northing: 6048525.57	1976-77	1986-87 (minor) 1989-90 1996-97 1999-2000 2001-02 (minor)	
015 Easting: 550713.95 Northing: 6048544.17	1979-80		
037 Easting: 550885.82 Northing: 6049053.16	1936-37		-"White" ring at 1965 followed by a very narrow ring at 1966 -Very narrow rings at 1994-95 and 2002
040 Easting: 550710.02 Northing: 6048511.03	1974-75	2005-06 (minor)	
041 Easting: 550653.36 Northing: 6048319.12	1959-60	1980-81 1988-89 1995-96 2000-01 (minor)	

Conclusion

From the six birch wedges analyzed by dendrochronological means, 18 scars were detected. The oldest is aged at 1936-37 and the youngest at 2005-06. Four samples had more than one scar and healing lobe, and one tree had as many as six healing lobes. If only primary scaring activity is used as an indication of harvesting activity, then harvesting activity was conducted in 1936, 1952, 1959, 1974, 1976 and 1979 for these six trees.