

Brule River Preservation LLC Properties Fire History Progress Summary

Kurt Kipfmueller &
Liam Martin

Department of Geography, Environment, and Society
University of Minnesota-Twin Cities

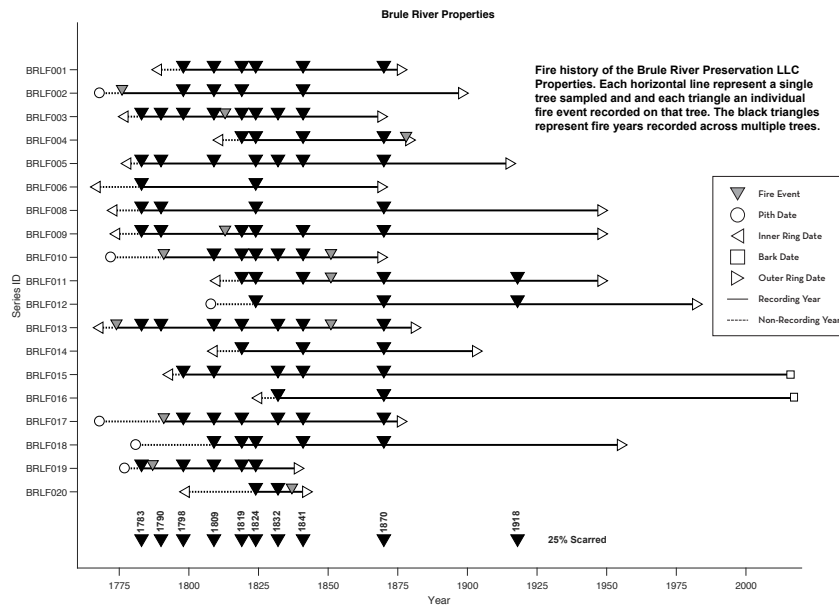


Figure 1. Fire history of the Brule River Properties. Each horizontal line represents a single tree sampled and each triangle an individual fire event recorded on that tree. The bottom triangles represent fire years recorded across multiple trees.

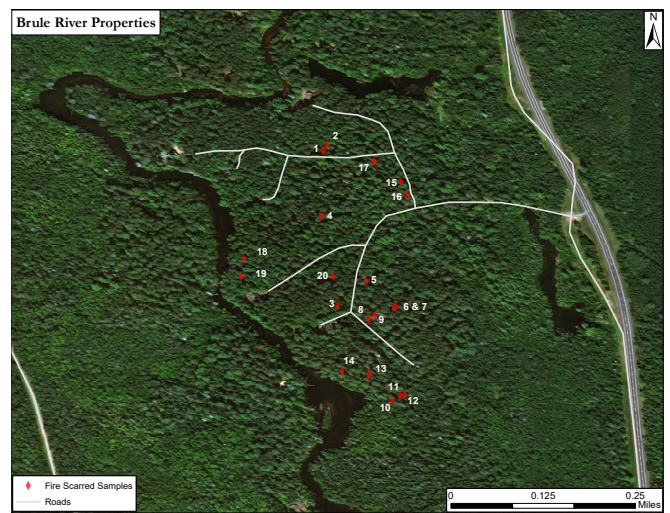
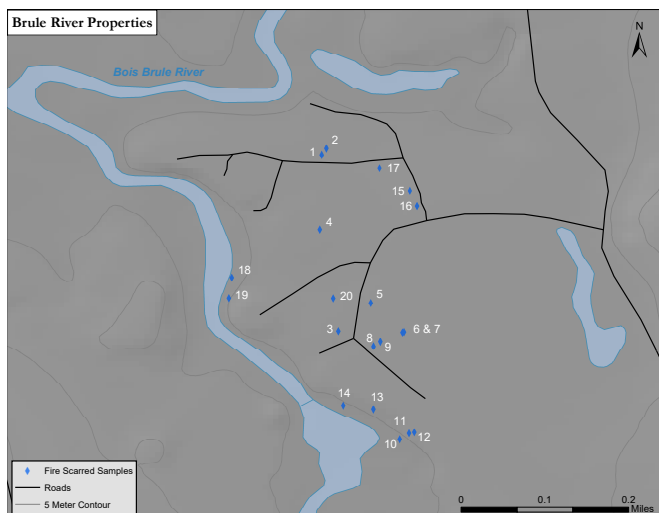


Figure 2. Maps of the Brule River Properties Study Site with the locations of the collected fire scar samples.

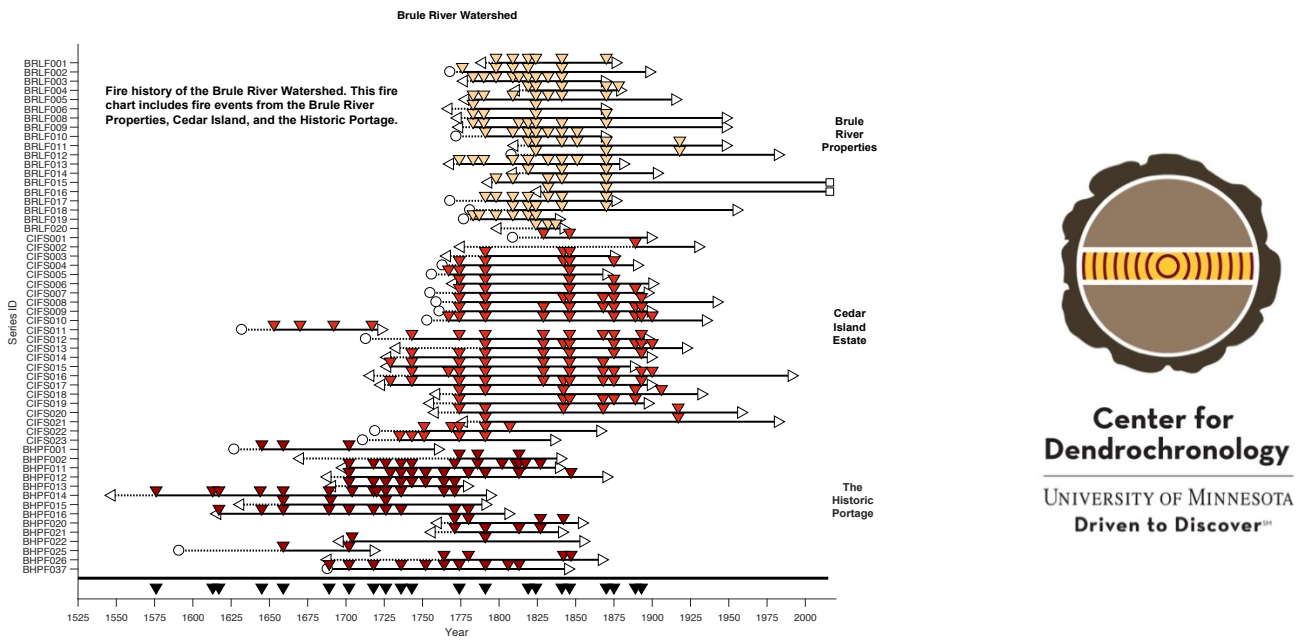


Figure 3. Initial fire history of the Brule River Watershed. The fire chart includes fire events from the Brule River Properties, Cedar Island Estate and the Historic Portage. Each horizontal line represents a single tree sampled and each triangle an individual fire event recorded on that tree. The bottom triangles represent fire years recorded across multiple trees. Fires occurred at all three sites only in 1774 and 1791.

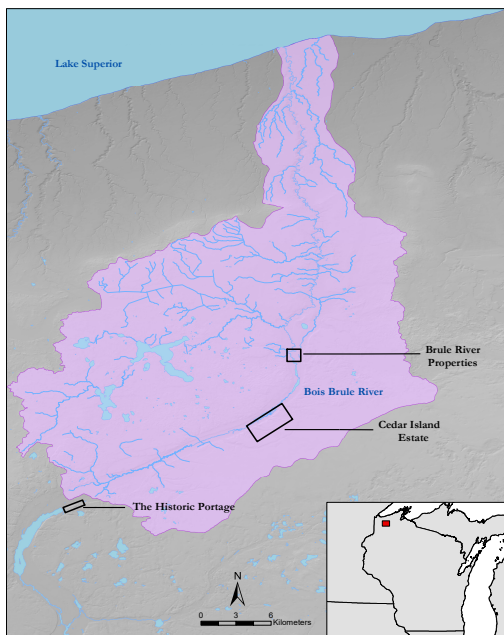


Figure 4. Map of the study area showing the locations of sites within the Brule River Watershed.

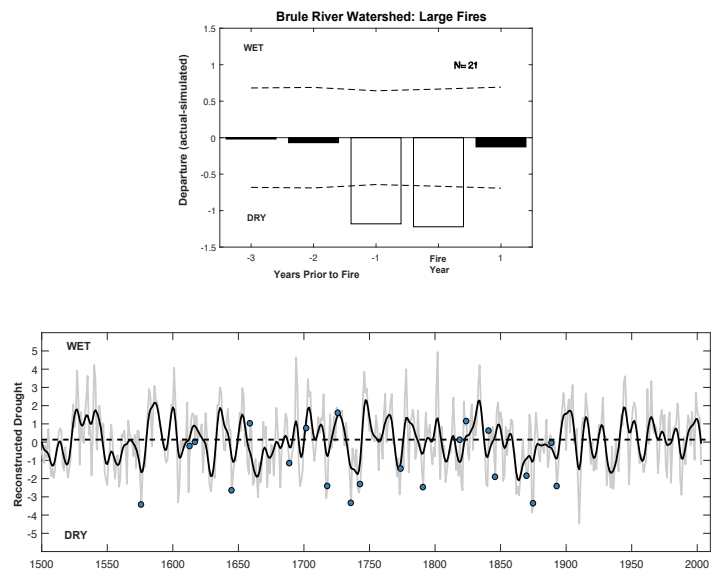
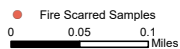
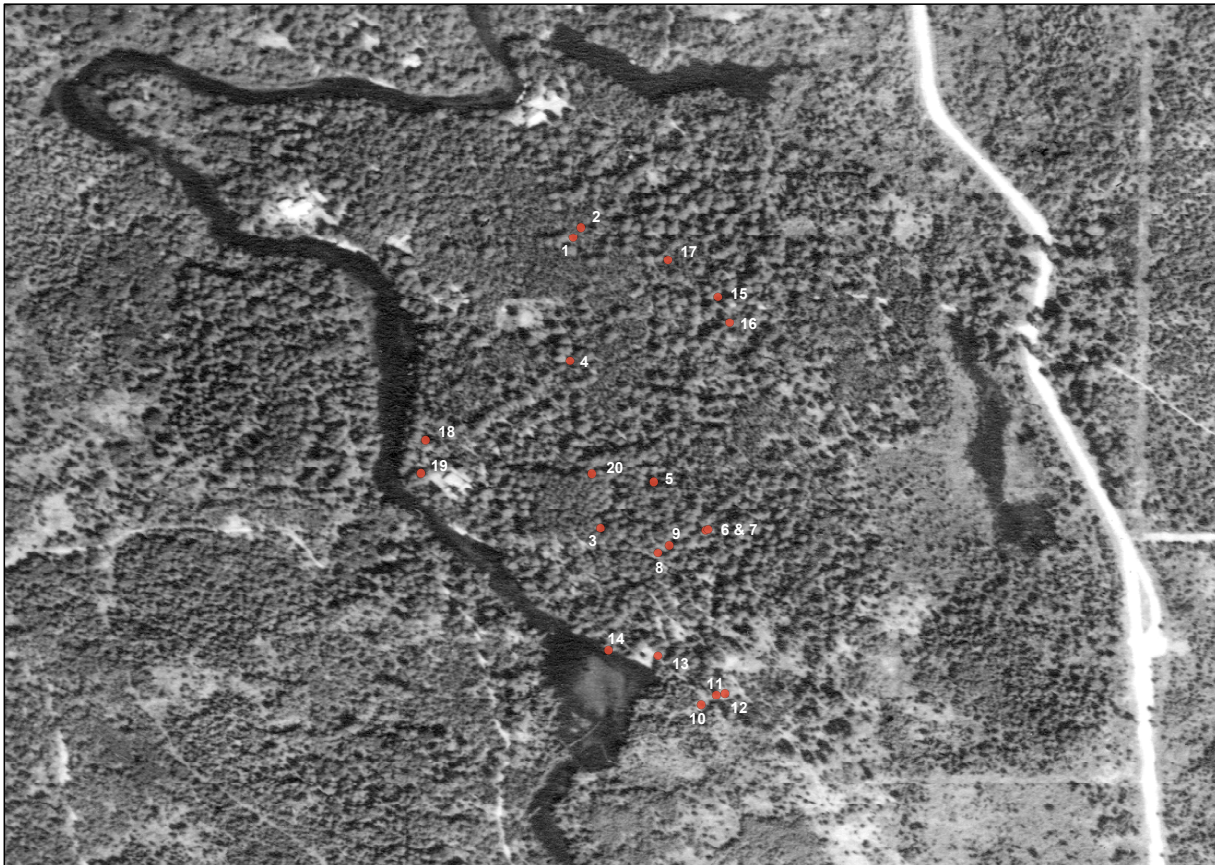


Figure 5. A comparison between fire events and drought patterns using a statistical procedure. Top graphic: The association between fire events and climate. Positive bars represent wetter than average conditions. Negative bars represent drier than average conditions. Large fires within the Brule River Watershed are significantly related to regional drought (Clear bars that pass the dashed lines representing the 95% confidence limit). Dry conditions during both the year of a fire and the year prior are statistically related to large fire events. Bottom: A time series showing the relationship between individual fire years and a measure of regional drought (Palmer Drought Severity Index). The blue circles represent unique fire years and the grey and black lines represents tree ring based reconstructed regional drought.

Summary:

The Brule River Properties forest experienced fires about every 10 - 15 years from 1770 - 1878. The Cedar Island Estate and The Historic Portage supported a similar rate of fire, however the fires tended to occur in different years. The only fire events that occurred at all three sites were 1774 and 1791. The first reconstructed fire occurred in 1576 at the Historic Portage and the last reconstructed fire occurred in 1918 at the Brule River Properties. Portions of the record appear to be absent from the data collected. The Brule River Properties samples do not extend past 1770, while the Historic Portage samples do not extend through the late 1800s. It is possible that the Historic Portage was logged circa the 1870s, which would explain the lack of data extending into the modern record and the comparatively young, 100-150 year old red pine presently at the site. Cedar Island samples appear to span the middle portion of the record, between the Brule River Properties and the Historic Portage. Widespread fires that occurred within the watershed are driven by regional climate patterns, namely summer drought. Liam plans to defend his thesis in the Fall and will provide copies of his thesis upon request.



Douglas County Wisconsin Historic Aerial Imagery: 1938



Contact Information:

Liam Martin: mart2493@umn.edu

Kurt Kipfmüller: kurt@umn.edu