Analysis of the Relationship between Climate and Pinus elliottii Ring Chronologies, Year Two

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This project was executed with the intention of gathering information regarding the responses of Pinus elliottii trees to their environments. An understanding of the relationships between trees and environmental factors - specifically annual precipitation - can be used for ecosystem management and may provide opportunities for the extension of historical climate records. It was predicted that year with significantly greater rainfall values would be represented in the rings of study with increased growth. The experiment was conducted using data from P. elliottii core samples taken from the Crystal River Preserve State Park. A master chronology was created with growth patterns displayed by the core samples. It was then compared to precipitation records from the area of study. Statistical procedures were executed in analysis of the comparison. Correlation between growth and rainfall were noted. Eight of eight 90th percentile rainfall years correlated with increased growth in the master plot, six of eight doing so in the manner hypothesized. High rainfall years tended to display higher growth, while drought years often displayed lower growth. From the study, an understanding of the relationships between different variables including rainfall and drought can be established, further assisting in future management efforts. While correlation is not causation, a relationship is evident and the hypothesis was supported.

Awards Won: