2012 Summer Field Project Proposal

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Background: Thirteen forest stands known as the Federer Chronosequence stands were inventoried in 1994. Since the original inventory they have been set up on a nine year cycle of inventory collection. Following this schedule inventory was also undertaken in 2003. In 2004 an additional younger stand was added and inventoried. 2012 marks nine years since the last inventory requiring another cycle in the inventory process. At the end of this summer eighteen years of stand data will be available for comparison.

 The stands have been used for various studies throughout the past eighteen years such as forest floor, leaf litter, and woody debris studies. No studies or visitations have been conducted in the stands since 2006. The stands were selected with a variance of ages including young, mid, and old growth stands. Ages vary from less than 20 years since the last harvest to 130 plus years.

Objectives: Through the data collected the objective is to show the pattern of growth in each chronosequence stands in the past 18 years of collected data. Through analyzing the data the goal is to see trends in forest growth. With comparison of data it can potentially show when a northern hardwood forest reaches its maximum growth.

 Growth will be compared by calculating basal area of the inventoried trees with a DBH of 2.0 centimeters and higher. The total biomass may also need to be calculated for each stand and analyzed as well.

Methods: Fourteen chronosequence stands will be used across the White Mountains of New Hampshire. The stands were set up in previous years and originally inventoried in 1994. Each stand has five transects with a stake at each end of the transect. Each transect is 50 meters apart with the exception of two stands where they are only 30 meters apart. Each stand will be inventoried in a systematic process.

 Trees 10.0 centimeters diameter at breast height (DBH) and greater within five meters of each side of the transect will be measured and species identified. Dead trees will be measured as long as they are still standing at a 45 degree angle or greater. Trees that fall on the boundary will be inventoried as long as half of the tree or more is within the transect boundary. Stands with only 30 meter transects will be inventoried within 2.5 meters of each side of the transect.

 Along the transect a series of subplots will be laid out starting at zero meters on the right side. This will continue every 11.25 meters alternating sides of the transect. In the stands with shorter transects subplots will be inventoried every five meters. A five meter square subplot will be created and saplings 2.0 centimeters DBH to 9.9 centimeters will be inventoried within the subplot. A two meter square subplot will also be laid out to inventory species of woody plants greater than 50 centimeters tall and less than two centimeters DBH. These species will be inventoried as a count and not a measure. The final subplot will be one meter square and every woody plant species less than 50 centimeters tall will be counted. These plants will be identified as being either seedlings or germinates.

Graphs: The following graph is a comparison of basal area in three stands across eighteen years. Only stand H2 had an expected increase in growth. H1 and H3 both had an increase in basal area in 2003 but has decreased in the past nine years. The data needs further analyzing to confirm if these trends are accurate.