

# Has increased CO<sup>2</sup> impacted the northerly limit of Eastern Climbing Poison Ivy over the last 50 years?

## A Benchmark Study

by W. T. Gillis, 1960

### Research Criteria

"Because of the apparent range limits (of Eastern Climbing Poison Ivy) at the 44th parallel in eastern United States, a study area was sought along a north-south river valley whose floodplains and terraces would likely be hospitable to the climbing forms to the south (*Toxicodendron radicans subsp. radicans* and *negundo*), yet a river valley which would cross the 44th parallel. The Connecticut River Valley, both in New Hampshire and Vermont, was explored. As I searched southward through New Hampshire, the first place where climbing poison ivy was encountered was on a stream bank at the West Thornton Woodstock city line in Grafton County at 44 N. This collection appears to be an intergrade between *T. rydbergii* and *T. radicans subsp. radicans*." \*



W. T. Gillis

### An Intention Fulfilled

"If this investigation can serve as a reference point for study of problems in population variability, plant migration, modification through evolution, and variability in human sensitivity, then a primary objective will have been met." \*

\* From *The Systematics and Ecology of Poison-Ivy and the Poison-Oaks*, by W. T. Gillis

### Background / Question

On August 31, 1960, Dr. William T. Gillis collected Eastern Climbing Poison Ivy (*Toxicodendron radicans subsp. radicans*) in Grafton County New Hampshire slightly south of 44 N. Gillis noted that this poison ivy plant climbing an American Elm (*Ulmus americana*) "...was probably the farthest north the climbing form occurs."

A 2007 study by Dr. L. Ziska and Dr. J. Mohan, et al. entitled *Rising Atmospheric Carbon Dioxide and Potential Impacts on the Growth and Toxicity of Poison Ivy* (*Toxicodendron radicans*) found that poison ivy growth and density had accelerated due to increased atmospheric CO<sup>2</sup>. According to a 2009 report in the journal *Environmental Health Perspectives*, "The concentration of atmospheric carbon dioxide has increased by 22% since 1960..."

**The Question examined: What is the affect of increased atmospheric CO<sup>2</sup> upon the northern limit of Eastern Climbing Poison Ivy growth, as documented by Gillis in 1960?**

### Results / Conclusions

After obtaining an image of the sample collected by Gillis from the Beal Darlington Herbarium at Michigan State University (New Hampshire. GRAFTON CO: West Thornton, Gillis 4097;162991 MSU), I traveled from Philadelphia, PA to West Thornton, NH in search of the most northerly occurring Eastern Climbing Poison Ivy.



On September 24, 2010, I found a rhizome of the Eastern Climbing Poison Ivy plant found in 1960 which is currently growing on a Common Chokecherry tree (*Prunus virginiana*) 2 meters north of the Elm observed by Gillis. (The Elm has reduced to 1 meter tall root water sprouts.) I collected a sample of this poison ivy plant which has subsequently been entered into the Herbarium at Michigan State University (New Hampshire. GRAFTON CO: West Thornton, Mycka 398487 MSU).

Between September 25 and 28, 2010, I searched north of this site and beyond 45 N but could not find Eastern Climbing Poison Ivy. However, as expected, I did find Ryberg's Prostrate Poison Ivy (*Toxicodendron rydbergii*) plants growing in both Lancaster and Colebrook, NH. In personal correspondence with David Falkenham, a New Hampshire state forester, Mr. Falkenham stated that in fifteen years of stewarding 90,000 acres of state lands from 44 N to the Canadian border, he never observed the growth of climbing poison ivy.

**Despite the increased atmospheric CO<sup>2</sup>'s affect on the growth and density of poison ivy, no significant change on the northern range limit of Eastern Climbing Poison Ivy was observed from 1960 to 2010. It therefore appears that the northern range of Eastern Climbing Poison Ivy has not been affected by the atmospheric CO<sup>2</sup> increase.**



## Recent Findings

by Umar K. Mycka,  
Poison Ivy Horticulturist, 2010



Umar K. Mycka  
Email:  
info@idontwantpoisonivy.com  
Phone:  
267.968.5971

### Discovery Points

Following up the 1960 research of Gillis, I found and documented that an Eastern Climbing Poison Ivy plant can live for 50 years.

Three factors influence and encourage the growth of Eastern Climbing Poison Ivy: proximity to areas disturbed by human activity, hardwood forest valleys, and nearness to a river with oxbow geological formation. The site studied has all three encouraging factors.