

Les Cheneaux Forests are Carbon Dioxide Sponges S. Myers

The focus of this article is on the contribution of the Les Cheneaux forest cover to the reduction of Carbon Dioxide (CO₂) in the atmosphere.

The Les Cheneaux Watershed Council recognizes that residents, full-time and seasonal, are aware and concerned about the detrimental impact of excess CO₂ on climate change. As individuals, we can all strive to minimize our carbon footprint, but have you thought about how the trees within our watershed contribute to absorbing CO₂ and the ability of our forests to effectively remove it from the atmosphere? Natural forest management has the second largest maximum CO₂ mitigation potential of the methods studied by a group of concerned scientists².

It is well known that trees and other plants need CO₂ to live and grow. In the process they produce the Oxygen necessary for humans. Fast growing trees such as conifers (pine and cedar) take up CO₂ quickly while slower growing deciduous trees (Maple, Beech, Oak, and Birch) consume more CO₂ producing denser wood. In the Les Cheneaux area most pines and cedar are green all year and so continue to absorb CO₂ and sequester carbon all year. The amounts of CO₂ absorbed by the different types of forest have been calculated in several scholarly papers.

The forested area in the Les Cheneaux Watershed is a combination of narrow leaf (conifers) and broad leaf (hardwood) forests. Based on the author's personal observations and published maps, it is estimated that the watershed forest is about 60% conifer and 40% deciduous. This equates to approximately 120,000 acres of pine, cedar, spruce and other conifers and 51,760 acres of maple, beech, birch and other hardwoods.

Calculating the amount of carbon dioxide absorbed by trees can be tricky. It is dependent on growth rates, the age of the trees and overall weight. There are several papers that deal with this issue and each one has a different result. All of the papers agree, however, that the amount of CO₂ absorbed can be calculated using the weight of the tree. The numbers used in this article are from an article in the International Journal of Forestry Research and Engineering.³

In the journal article the amount of CO₂ sequestered by a 120 year old hardwood forest in our growing zone is about 3909 pounds per acre per year. A pine type

forest of the same age, however, sequesters 7,516 pounds of CO₂ per acre per year. Using the assumed number of 700 trees per acre this works out to about 6 lbs per tree per year for hardwoods and 10 lbs per tree per year for conifers. Other estimates run as high as 48 lbs per year per tree.

Since the Les Cheneaux watershed forest has around 120,000 acres of conifers and 51,760 acres of hardwoods the total amount of CO₂ absorbed can be quickly estimated:

Conifer forest:

120,000 acres X 7516 lbs/acre/year = 901,920,000 pounds per year

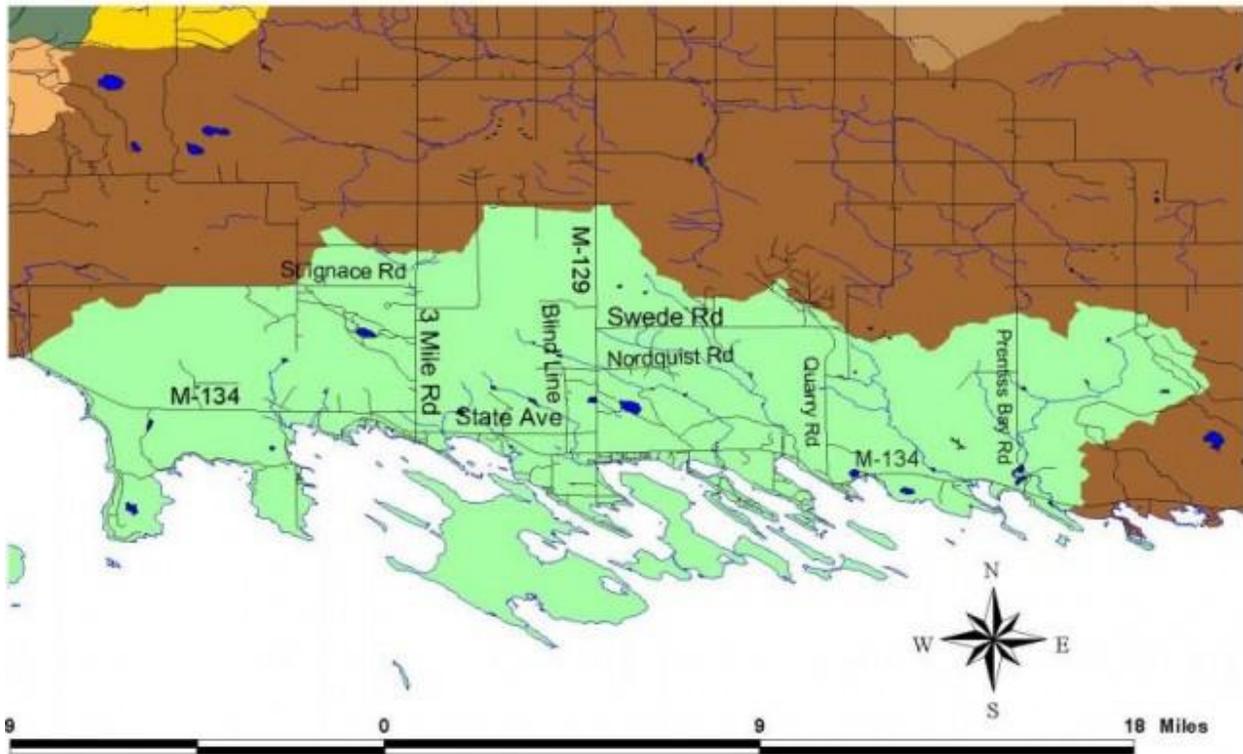
Hardwood forest:

51,760 acres X 3909 Lbs/acre/year = 202,329,840 pounds per year

The total amount of Carbon Dioxide sequestered by the forest in the Les Cheneaux Watershed, then, is over 1 *billion* pounds or over 500,000 metric tons per year. These numbers of course are approximate and will vary.

We cannot ignore the fact that trees die and decompose, of course, releasing a lot of the sequestered CO₂ so the net result is unknown. What we do know is that being in our forest can be a relaxing and rewarding experience. So the next time you are hiking, biking, boating or driving in the Les Cheneaux area, consider how the local trees and forests are helping make our area such a desirable place to be. Please help the Watershed Council maintain the diversity and viability of our forest ecology!

PLATE 1



The Les Cheneaux watershed is considered a subwatershed of the Carp-Pine Watershed located in Michigan's Eastern Upper Peninsula. Specifically, the Les Cheneaux watershed is located in eastern Mackinac County with one subwatershed located in south-central Chippewa County. It stretches east from Saint Martin's Point to Cadogen Point and north from Lake Huron to about Rockview Road (see Plate 1). The area encompasses roughly 378 square miles or about 241,920 acres of dry land.

The Les Cheneaux Watershed includes a variety of natural environments from upland meadows to lowland marshes and wetlands. It is a natural habitat for several species of aquatic and land-based plants ranging from simple grasses to several species of conifers and deciduous trees. The forest cover makes up the majority of the watershed's land cover (71%)¹ or about 171,760 acres.

Cited

- 1) LCWC Website About Our Watershed
- 2) Natural climate solutions for the United States, *Science Advances* 14 Nov 2018:Vol. 4, no. 11, eaat1869DOI: 10.1126/sciadv.aat1869
- 3) Carbon sequestration: how much can forestry sequester CO₂?: *Forestry Research and Engineering: International Journal*, Volume 2 Issue 3 - 2018