

## Future of the Forest

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### Goals:

After completing this investigation, you should be able to:

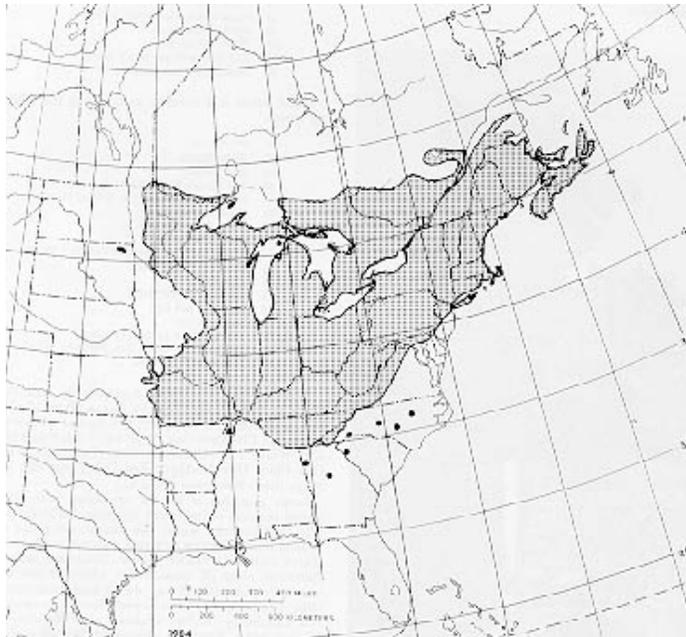
- describe how the climate has changed in the recent past (since 1950) and how it is predicted to change in the future; and
- describe how tree species distributions have changed in the past and are predicted to change in response to changing climate.

### **PART A: Migration of the Trees**

Link to reading:

[http://www.na.fs.fed.us/spfo/pubs/silvics\\_manual/Volume\\_2/Acer/saccharum.htm](http://www.na.fs.fed.us/spfo/pubs/silvics_manual/Volume_2/Acer/saccharum.htm)

1. What is the native range of the Maple tree ? (see the map below)



2. According to the publication, what is the optimum temperature for germination? Scroll down the page to where it discusses germination, under the heading "Seed Production and Dissemination," to find this information.

3. What happened to the Maple seed crop in Wisconsin in the winter and spring of 1977-1978?

4. Based on the outcome of this event, what do you predict will happen to the germination success for trees in the next 40-70 years?

5. Now that you have explored climate factors, explain how climate zones are used to make hardiness zone maps and why the USDA revised the hardiness zone map in 2006 and again in 2011. How do you think climate change will change the types of plants growing in your neighborhood?

6. What types of impacts could a change in the tree species have on other life in the forest, for example, insects or birds?

### **PART B: Maple Syrup and Climate Change**

1. Which city will see the most dramatic change (greatest increase) in temperature in A2 (high) emissions scenario?

2. Which scenario produces the greatest change in temperature?

3. Which city, and region, will see the most significant change in the sap flow start date?

4. According to the article, *Maple Sap will Flow a Month Earlier*, how will climate change affect the maple syrup industry?

5. The Historic Sap Flow Window is the time period in which the maple sugar season traditionally has taken place in New England. If farmers were to continue to use this time period for sugaring, what would happen to their production

## **PART C: Suitable Trees for your Home Region**

### **Show what you know**

Apply what you have learned in this module about weather, climate, and climate change to select plants and trees for your neighborhood. You will need to answer these questions as you complete your plan:

- What is your biome? (see [Lab 4A](#) for details on how to locate this information)
- What is your typical climate? (see [Lab 3C](#))
- What trees are suitable for your region? Find your [hardiness zone at Arborday.org](#). Then use the website to find the trees that will grow well in your zone.
- How will you be using the trees? Is it for shade, as a windbreak, or as a decorative accent?
- Use the Arbor Day tree selector to help you narrow your choices.
- Will the trees be suitable to the "new" climate in 2050? Once you have a few trees selected, return to the [Tree Atlas](#) website to see if the range of the trees you have selected presently includes your home region and if those trees species will grow in your area in 50 years.

Prepare a 3-5 minute presentation answering these questions to share with your family, neighbors, or school officials. Make the case about how trees are impacted by climate change and how your careful selection and addition of trees can help to make a difference.