

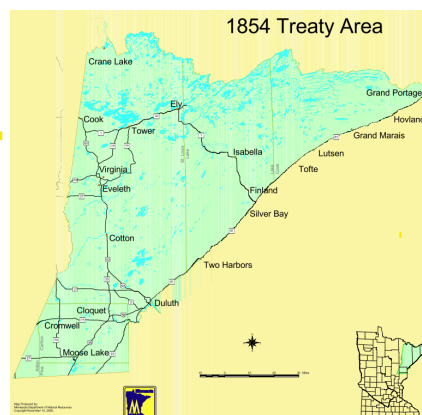
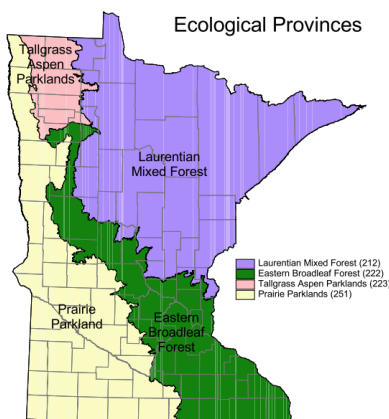


## Minnesota State Envirothon Current Issue Scenario 2025

### Roots and Resiliency: Fostering Forest Stewardship in a Canopy of Change

*A quick note about the scenario: The goal of this scenario is to prepare teams to compete in the national competition. Many of the ideas and themes in this scenario relate directly to the national themes, which include ideas about community, climate change, climate modeling, engagement with Indigenous communities and ideas, forestry management, and adaptive forestry practices. Managing our forests is an important and complex social, environmental and economic challenge. In short, a big sustainability challenge.*

You just graduated from college and have started working for a natural resources consulting business. A focus of the business is working with cities and Native nations to maintain the health of their forests and forest ecosystems. The business is called **Big Tree Resources Incorporated (or BTR for short)**. You enjoy working with this diverse team. And, you have made new friends, including some who grew up on Native nations in Minnesota. Several of them attended the [University of Minnesota Morris](#), which was a Native American boarding school in the 1890s/1900s. Today, the campus provides a [tuition waiver](#) for Native students.



You live in Duluth. While driving along the North Shore of Lake Superior you noticed some dead and dying birch trees. Recently, you visited with some folks that are part of *The North Shore Forest Collaborative* to better understand [what is happening](#) to these trees. You also read a summary about how [climate change](#) is impacting the [Northwoods](#) – also known as the Laurentian Mixed Forest. Fortunately, forest professionals are working to [adapt](#) to these changes.

BTR has been asked by leaders of the [Fond du Lac Band of Lake Superior Chippewa](#) at the **Fond Du Lac Reservation (FDL)** to consult with them on public engagement in the region, including in the city of Cloquet. Sometimes, on the roads outside of Duluth you have seen highway signs about the [1854 Ceded Territory](#). Ceded is a funny word, so you [look it up](#). You wonder if that is related to the [1854 Treaty Authority](#). You think there must be a [connection](#). There is a [lot of great information](#) to digest – like what is the difference between the words Chippewa, Ojibwe and Anishinaabe? You have been asked by the BTR management team to prepare a presentation for your outreach. Your BTR colleagues want you to present to them before the team begins outreach in the community.

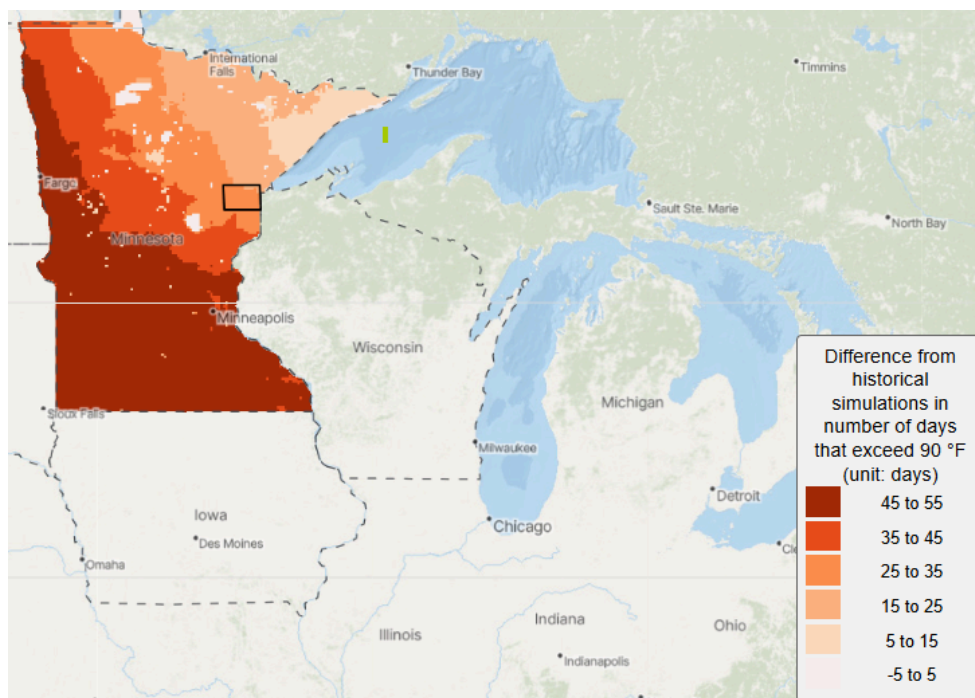
You also need to prepare for your next meeting with FDL leaders. You want to better understand the history of the FDL community and what projects they have been working on recently. One of your colleagues told you that FDL has been in discussions with the University of Minnesota about [returning land to the tribe](#) and that the [U of M Cloquet Forestry](#) Center has operated on tribal lands for a very long time.

Native communities have managed lands in what we call Minnesota, [a Dakota word](#), that can be translated as “the land where the waters reflect the skies”. Native communities have accumulated vast experience in how to maintain the health of their people and environment. This hard won knowledge has many names, but some Indigenous people call it traditional ecological knowledge [or TEK](#). Native peoples pay close attention to the [cycles and seasons](#) of life, like when robins first appear or when wild rice is ripe.

The Western scientific name for this field of study is called [phenology](#). Groups like the [Great Lakes Fish and Wildlife Commission](#), which is also called [GLIFWC](#) (like gliff-wick), brings together tribes to co-manage natural resources.

Climate scientists are working to better understand how a changing climate will impact Minnesota’s [northeast forests](#). The impacts of climate change are happening now, but have the potential to worsen depending on the decisions that human beings make and how much climate pollution we put into the Earth’s atmosphere. There are scientific names for these different scenarios about what human societies will do in the future. You decide to learn a bit more about these names, which have abbreviations like [SSPs and RCPs](#) (especially see p.10-13). Scientists working at the University of Minnesota Climate Adaptation Partnership recently released a [new climate tool called Minnesota CliMAT](#), which provides downscaled climate projections. You wonder if countries will work together to aggressively tackle climate change or mostly keep using lots of fossil fuels? You also know that Minnesota has no fossil fuel resources.

**Minnesota CLiMAT simulation for Carlton County of projected increase of days above 90 degrees Fahrenheit by end-of-century under a high emissions scenario (SSP370).**

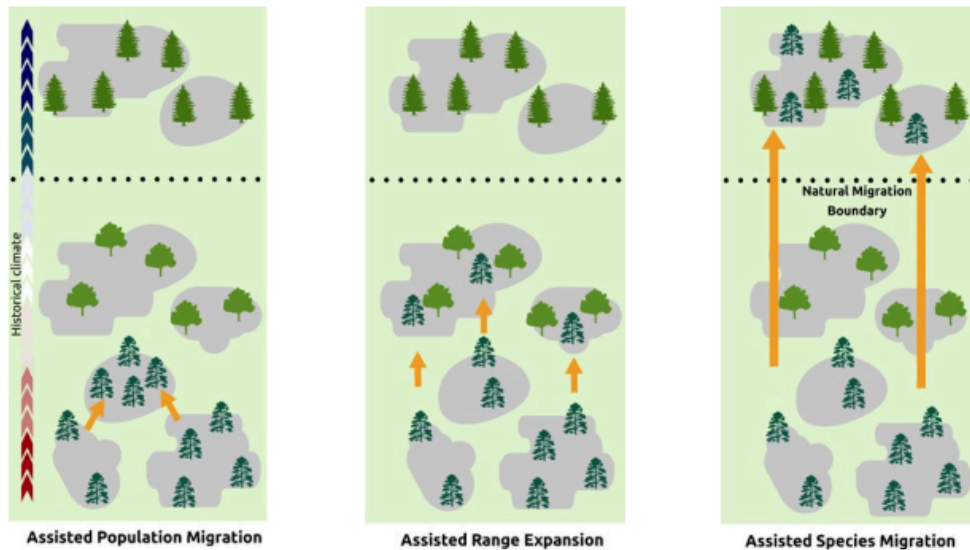


On average, by end-of-century (2080-2099), under a high emissions (SSP 370) scenario, annual number of days that exceed 90 degrees Fahrenheit in Carlton County is projected to increase 28.3 days relative to historical simulations (1995-2014).  
Model: ensemble | Grid cells in AOI: 150 | Source: climate.umn.edu v1.0 beta

The ways we manage forests have changed over time. Natural resources managers are learning more about how [Native communities used fire](#) to maintain the health of the trees and other [plants and wildlife](#) in the forest. But, for a long time, including at the Cloquet Forestry Center, the goal was to avoid fire. This had a big impact on the production of important cultural foods, [like berries](#).

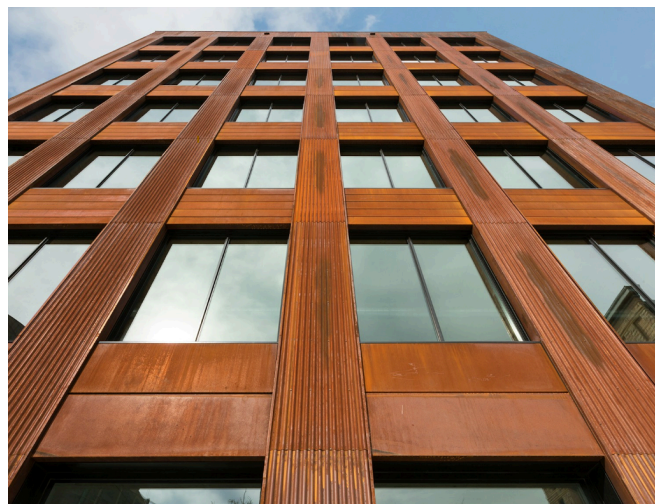
Given that we already know Earth's climate is changing, scientists and foresters are developing [new adaptive practices](#) (see page 10). For example, moving trees that are thriving in one climate to a different climate in anticipation of future change. This is called assisted migration. And, there are at least three different assisted migration strategies.

## Adaptive Practices from Superior National Forest Assisted Migration Plan



Tribes across the Upper Midwest are working hard to manage their forests, including in Wisconsin. Your colleague at BTR said she had recently visited Menominee Nation, the College of Menominee Nation, and visited their amazing [forest](#). She was really impressed by their [long-standing forestry work](#), [forestry management](#) ideas, and the way they talk about [sustainability in their community](#). You think it is a good idea to get some additional perspectives of how other Native nations are managing their northern forests.

## The Menominee Theoretical Model of Sustainability T3 Minneapolis Building



Maintaining a healthy forest has many benefits. For as long as humans have been around, wood has been an important resource. Even now, society is finding new ways to use forests and wood products as [climate](#) and [building](#) solutions. You realize that forests are an important economic resource for communities that can be stewarded many different ways.

As your team prepares for community presentations, your team agrees to a basic outline of things to share:

1. Provide some basic history and culture of FDL, including what legal agreement between the United States and the Chippewa Nation established the FDL reservation?
2. Provide examples of how the climate has changed in northeast Minnesota, future climate changes expected, and expected future impacts?
3. Briefly explain how climate models work and what assumptions they make about the greenhouse gas emissions that humans will emit in future years.
4. What are some examples of forest management practices being used to manage climate impacts? What are some organizations doing this work?
5. What are some ways that Native communities talk about the idea of sustainability and knowledge?
6. What are some ways lumber could be used to cut the carbon footprint of buildings?