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# Preparing for a Changing Climate

## Two Examples from Private Landowners

By Stephen Handler

Foresters are natural problem-solvers. I'm reminded of this again and again in my work because I regularly talk with people about one of the most difficult problems of our time: climate change. The organization I work for, the Northern Institute of Applied Climate Science (NIACS), is focused on helping forest managers and forest owners think about climate change in a way that's practical and relevant to their goals. We help people consider the best available information, evaluate potential risks and opportunities for their own properties, and design custom adaptation plans. With lots of willing partners, we're creating a growing network of real-world adaptation examples across the Midwest and Northeast, including many from Michigan: [www.forestadaptation.org/demonstration-projects](http://www.forestadaptation.org/demonstration-projects). It might seem like an impossible job to measure up against an issue as big and complex as climate change, but I'm continually impressed with how foresters assess risk and come up with common-sense ways to prepare.

To show you exactly what I mean, I'll describe two recent examples of climate adaptation from Michigan. Matt Watkeys and Warren Suchovsky are both forest owners who happen to have a lot of experience with forest management. Matt is the Forestry Assistance Program forester with the Marquette Conservation District and Warren owns a logging company that operates all over the U.P. and northeastern Wisconsin. Over the last 2 years, I've worked with both Matt and Warren to consider climate change on their properties. I led them both through the "Adaptation Workbook," a step-by-step process to design custom management actions that help adapt for climate change (Published version: [www.nrs.fs.fed.us/pubs/40543](http://www.nrs.fs.fed.us/pubs/40543), Online version: [www.adaptationworkbook.org](http://www.adaptationworkbook.org)).

I recently talked with both Matt and Warren to learn more about the work they've done on their properties since we had our climate change discussions. Let's take a closer look and see what they've been up to!

### Matt Watkeys Family Camp

Matt and his family own a 20-acre camp next to the Laughing Whitefish River near Deerton. Their property includes a 12-acre stand of northern hardwoods that Matt intends to manage as a sugarbush and to provide food for a variety of wildlife species. When Matt considered climate change risks that might be most important for his woods, a few big things came to mind. Climate change has the potential to cause more stress for sugar maple in the future, particularly if droughts become more common and if more variable snowpack will lead to freeze-thaw events that can damage fine tree roots. Beech bark disease (BBD) has also moved through Matt's property in recent years, which has removed an important source of mast for wildlife. The BBD outbreak was also a reminder that climate change might result in more pest and disease outbreaks that target particular tree species.

With these thoughts in mind, Matt planned a timber harvest to improve the resilience of his hardwood stand, or its ability to withstand future stress and change. The timber sale was implemented in late 2015, and a few key components were:

- Thinning the hardwoods to help keep the stand vigorous and healthy, which will give trees a better chance to withstand a variety of stressors.
- Matt favored more red maple in this stand than he might have otherwise. Red maple is one of the species expected to be best able to tolerate future climate change.
- In gaps created by dying beech, Matt will plant a variety of tree species that are expected to gain suitable habitat in the U.P. under climate change. These include mast species like northern red oak, black walnut, and hazelnut. Matt will protect these test trees again deer browsing with tree tubes or fencing.

### Warren Suchovsky Property

Warren owns 848 acres in Menominee County near Stephenson. His property includes farm fields and several different

forest types, as well as the headquarters of his logging operation. Warren's management goals include managing the land for a sustainable income, providing habitat for a variety of songbirds, and protecting riparian and ecological features on the property. Warren recently had Rexx Janowiak, a consulting forester from Green Timber Consulting Foresters, prepare a 20-year NRCS management plan. I worked with Warren and Rexx while they were preparing the plan to help them consider climate change impacts. The final plan is available on the NIACS website: [www.forestadaptation.org/suchovsky](http://www.forestadaptation.org/suchovsky).

One of the first areas Rexx recommended addressing was a lowland conifer stand. Researchers and managers agree that lowland conifers are the most vulnerable cover type under climate change because warmer temperatures and changing precipitation patterns could be beyond the limits for many northern species like balsam fir, northern white-cedar, and black spruce. (See "Preparing for a Climate Change", p. 15)



Above: Approximate locations of the two climate adaptation examples.

Below: Trees can be planted to provide mast and increase diversity. A northern red oak is at the bottom of this tree tube. Photo credit: Matt Watkeys. Used with permission.



## DEER WINTERING COMPLEXES

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inside and adjacent to DWCs often provide protein-rich food for several weeks in spring and fall before deer enter or vacate the complexes.

Following the severe winters of 2013 and 2014, and subsequent deer declines, concerns were raised about habitat conditions, especially the shelter in the DWCs. The U.P. Habitat Workgroup (UPHW)W)HH, a Natural Resource Commission workgroup composed of state, federal, corporate, private foresters and biologists, as well as sportsman's group representatives was tasked with addressing winter habitat concerns. One of the primary deliverables of this group was individual DWC management plans that include habitat strategies for managing both the food and shelter resources. As of 15 March 2016, 22 of these DWC plans were completed. Timber harvest is the primary influence on winter deer habitat. The plans make timber management recommendations to provide additional shelter and food resources. While the details may vary in each plan, below is a summary of habitat recommendations.

- Maintain primary shelter (cedar and hemlock stands).
- Deer numbers in winter most likely preclude regeneration of these species.
- Defer harvest in these stands.
- If timber harvest is necessary, implement partial cutting maintaining cedar and hemlock for deer winter shelter.
- Increase or maintain secondary shelter depending on DWC shelter conditions (white spruce, balsam fir and white pine).
- Key habitat types – northern hardwood, lowland conifer, aspen, red maple.
- Retain conifer in hardwood, aspen, and red maple stands during harvest.
- Utilize partial cutting, patch retention, and other harvest methods to maintain and/or increase conifer component.
- Consider conifer plantings. White pine is typically encouraged, especially in red maple areas.
- Food resources.
- Key habitat types – northern hardwood, aspen, red maple, forest openings.
- Harvest during winter and leave the felled tops for deer to consume.
- Maintain oak in timber harvests to provide acorns during years of abundance.
- Manage forest openings to provide spring forage.

For more information about U.P. deer winter range, including detailed maps and access to the completed DWC management plans, check out the U.P. Habitat Workgroup website at: <http://bit.ly/U.P.habitatworkgroup>.

*Trailer: Steve Carson is a wildlife biologist with the Michigan DNR and serves on the U.P. Habitat Workgroup. ♣*

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Also, warmer winters (like this past winter) will make it more difficult to operate in these lowland stands. Despite these risks, Warren says, “We can’t just write these areas off, because they grow a tremendous amount of timber!” Rexx and Warren developed management recommendations for these stands to help them stay healthy, while encouraging a diversity of species and age classes and favoring a few species that might fare better under future conditions. Here’s what Warren recently did:

- Create patch clearcuts throughout the lowland conifer stands to encourage regeneration of tamarack, balsam fir, and black spruce. Having a young age cohort of these species can reduce their overall risk.
- Retain random leave patches of cedar, black spruce, white pine, and other species to keep an older age cohort and to provide a seed source.
- Retain individual white pine throughout the patch clearcuts as seed trees, to gradually increase the proportion of this species. White pine is one of the conifers expected to do well under future climate change.

### The Moral of the Story

Both of these examples illustrate a great point about preparing for future climate change – we can make decisions RIGHT NOW that reduce risk and keep forests healthy, and good forestry practices offer “win-win” opportunities to prepare for future change. We’ll keep following Matt and Warren’s examples, and creating more of these real-world case studies on our website: [www.forestadaptation.org](http://www.forestadaptation.org). Contact me if you’re interested to learn more about how climate adaptation could make sense for your property or the lands that you manage!

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### Helpful Resources

- Climate Change Response Framework– a collaborative climate change adaptation project operating in Michigan: [www.forestadaptation.org](http://www.forestadaptation.org)
- Forest Adaptation Resources: Climate Change Tools and Approaches for Land Managers – a resource that walks landowners through the Adaptation Workbook process: [www.nrs.fs.fed.us/pubs/40543](http://www.nrs.fs.fed.us/pubs/40543).
- Adaptation Workbook – a self-paced, interactive, online version of the Adaptation Workbook: [www.adaptationworkbook.org](http://www.adaptationworkbook.org).
- Forest Management in a Changing Climate: a series of five 1-page bulletins prepared by NIACS and Michigan State University Extension, covering a range of helpful topics: [www.forestadaptation.org/MI\\_climate\\_bulletins](http://www.forestadaptation.org/MI_climate_bulletins). ♣



*A lowland conifer stand on Warren’s property after recent harvest, with white pine and black spruce leave-trees and a reserve island. Photo credit: Warren Suchovsky. Used with permission*