

MAEOE Mini Grant Provides Research Equipment for Climate Change and Michigan Forests Field Trips

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How will climate change impact Michigan's forests? At the University of Michigan's School of Natural Resources and Environment (SNRE), Dr. Ines Ibáñez is working to answer this question. In 2012, SNRE partnered with Ann Arbor Public Schools to pilot test "Climate Change and Michigan Forests", a 10-day 7th grade science unit designed to teach students how forest ecologists like Dr. Ibáñez collect and analyze tree growth data in order to study the relationship between tree growth and climate change. During the unit, students have the opportunity to visit a local forest and collect data using the same research equipment that forest ecologists use. They also graph tree growth data to create a mathematical model, and draw conclusions about how climate change will impact Michigan forests in the future.



In 2014, approximately 470 students from 4 middle schools participated in the curriculum pilot, which included a field trip to a local forest. Dave Szczygiel, Environmental Education Consultant for Ann Arbor Public Schools, led the field trips. "I taught 7th grade in the classroom for 10 years at Clague Middle School, and it was fulfilling for me to watch 7th graders collect data in the field."

Szczygiel received a MAEOE Mini Grant in early 2014, which provided the equipment that made these field trips possible, including increment borers to take tree core samples, soil temperature probes, light meters, and magnifying glasses for examining tree core samples. "I could see students get absorbed into hands on data collection while in the field."

When asked about the field trip, students would often mention the use of a tool in the field as a highlight. Using tools to collect data (especially data that adults will see or even use) is generally a new experience for them at school. Many students have past knowledge regarding counting tree rings to determine the age of a tree but, beyond that knowledge, using increment borers and studying core samples to extrapolate weather patterns was likely new to 100% of the students."

During the field trips, volunteer naturalists from Ann Arbor Public Schools and the University of Michigan reinforced the concepts students learned in class while teaching about data collection methods that actual forest ecologists use to study the impacts of climate change on tree growth and distribution. The MAEOE Mini Grant was pivotal to ensuring that field trips had enough equipment for all students to have a hands-on learning experience.

Why climate change and Michigan forests? The 2014 National Climate Assessment (<http://nca2014.globalchange.gov/>) states that, "Between 1900 and 2010, the average Midwest air temperature increased by more than 1.5°F." This increase will exacerbate the stressors forests already face, and changing forest composition is one of the major issues the Midwest will face due to climate change. Michigan forests are expected to change dramatically as some tree species' ranges shift north. The Midwest depends on the fisheries, recreation, tourism, and commerce provided by the Great Lakes region and its northern forests, making this topic relevant to teachers and students.

Who can use "Climate Change and Michigan Forests"? If you are a middle school teacher or environmental educator and you are interested in using the Climate Change and Michigan Forests unit, please contact Dr. Michaela Zint at zintmich@umich.edu. In late 2014 the University of Michigan will launch a project website which will contain information about this project including curriculum materials and an online mathematical modeling tool.

