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## Research Focus: DePaul's Tree Whisperer

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Jalene LaMontagne and students Abby Leeper and Hanna Kemp studied white spruce population ecology in Michigan's Upper Peninsula.

# DePaul's Tree Whisperer

**A faculty population ecologist detects predictable patterns in tree behavior**

Those who have spent time with Jalene LaMontagne might agree that her fascination with trees is contagious. The population ecologist, who is an associate professor in the Department of Biological Sciences, says that it's not uncommon for friends living in different states or even different countries to send her photos of cones on conifer trees. "Friends, scientists, colleagues who have gone for a walk with me as I point out stuff on trees are changed forever. They're always going to look up at the trees now," she says.

Her research, the latest of which was recently published with co-authors Ian Pearse, David Greene and Walter Koenig in the May 2020 issue of "Nature Plants," focuses on mast seeding of white spruce and the seed cones they produce across the 3,000-mile span of North America. With the project, they sought to understand the pattern of tree behavior and why that behavior differed depending on regional temperature.

The scientists knew that, for example, weather in eastern North America could be quite different from weather in the West, called a climatic dipole. What they found was that those differing climates influence trees, with trees on one half of the continent producing a large amount of cones and trees on the other half producing few cones. These differences are called an ecological dipole.

What most surprised LaMontagne is just how predictable tree behavior was when weather was taken into

account. "I was putting together these maps of temperature differences in one year, and then lining them up with where there were high levels of reproduction. After I did a couple of them I was like, wait, I can basically look at the map of temperature and tell you where there's going to be high level of reproduction the next year at a continental scale. And that was really cool," she says. That high level of reproduction, in turn, could influence the population patterns and movements of different insects, mammals and birds that are searching for food. That's what she's researching now on a continental scale, with the help of a \$351,850 National Science Foundation grant.

Of course, for a project this large, she's not alone in her research. She's planning field work (it was paused this summer because



LaMontagne focused on white spruce seed cones in her recent research.

of COVID-19) at National Ecological Observatory Network sites across the country that track ecosystem data, and she works with collaborators to understand the role of climate and impacts on bird populations. At her lab at DePaul, undergraduate and master's students work with her to understand mast seeding. As she plants her fascination with trees and nature among her students, she is helping to develop the next generation of population ecologists.